ORDER

WP 6050.1E

FREQUENCY MANAGEMENT HANDBOOK

July 11, 1986

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Distribution: A-X-AF-3; A-X(AT/FS)-2, A-FAF-2/7(STD), A-FAF-3(2 cys ea), SAC FIFO (1cy) A-X (cc)-2 A-FFS-7 (LTD)

Initiated By: AWP-406

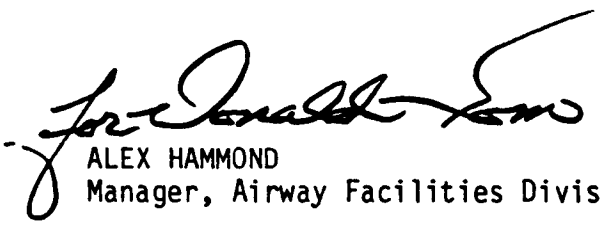
FOREWORD

1. PURPOSE. This Frequency Management Handbook provides the guidance and direction for all frequency management matters within the Region.

2. DISTRIBUTION. This order is distributed to Branch level and above in the Airway Facilities Division; with standard distribution to Airway Facilities Sectors and their subordinate field elements; Division level in Air Traffic and Flight Standards Divisions; Operations Center, AWP-6, the SAC FIFO, and limited distribution to Flight Standards District Offices.

3. CANCELLATION. Order WP 6050.1D, Frequency Management Handbook, dated September 1, 1983.

4. EXPLANATION OF CHANGES. The previous edition was considerably out of date; some federal agency names have changed, some network frequencies have changed; some new technical data have been added. The policy change requires the Telecommunications Staff, AWP-406, to take most Radar and Secondary Radar spectrum plots prior to flight check and commissioning. Most of the pages also need technical or editorial changes, so that a single new edition is issued.



ALEX HAMMOND
Manager, Airway Facilities Division

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CHAPTER 1. AUTHORITY AND RESPONSIBILITY

SECTION 1. REGULATORY AUTHORITY

1. WORLDWIDE AND NATIONAL. The control of the Electromagnetic Spectrum is vested in the International Telecommunications Union (ITU) through international treaties and conventions. Most of the countries of the world are signatories, including the United States, and are thus bound by the ITU allocations and regulations. The U.S. has its national regulatory function vested in two separate agencies, the National Telecommunications & Information Administration (NTIA) and the Federal Communications Commission (FCC). These agencies were created out of the Communications Act of 1934, as amended, and Executive Orders.

a. NTIA is situated in the Department of Commerce and exercises its authority through the Interdepartment Radio Advisory Committee (IRAC). NTIA authorizes and controls use of frequencies by all Federal government agencies, including FAA and military.

b. FCC is an independent agency whose members are appointed by the President, but whose actions are principally controlled by the Congress. FCC issues term licenses to all non-Federal users, including state and municipal governments.

c. The electromagnetic spectrum is divided into three categories in the U.S.: The NTIA portions, the FCC portions, and the joint-use portions. Each agency manages its own portions, while joint-use portions are authorized by the appropriate agency (NTIA for Federal, FCC for non-Federal) only after coordination with the other agency.

SECTION 2. AUTHORITY AND RESPONSIBILITY

2. LINE OF AUTHORITY. Within FAA, Frequency Management is in the Systems Engineering Service (AES), Spectrum Engineering Division (AES-500). From this organization, the authority and responsibility for the engineering of all new modified frequency requirements and the enforcement of NTIA frequency and spectrum tolerances are delegated to the Regional Frequency Management Officer (FMO) The Western-Pacific Region FMO is assigned to the Telecommunications Staff (AWP-406) within the Airway Facilities Division.

SECTION 3. WESTERN-PACIFIC REGION FREQUENCY MANAGEMENT

3. GENERAL. AWP-406 is responsible for:

a. Engineering and procuring IRAC authority for all Regional frequency requirements, and assuring IRAC technical standards are met and maintained.

b. Engineering and reserving aeronautical use frequencies for other federal agencies including military and non-Federal entities licensed by FCC.

c. Acting as the focal point for resolution of all radio interference problems within the Region.

d. Serving as Team Leader for the Regional Radiation Safety Survey Team (RRSST), conducting ionized and power density measurements.

e. Design and operation of the Regional Spectrum Analysis, Antenna Pattern Plotting and Interference Location (SAIL) vehicle.

f. Acting as Field Coordinator for the National Telecommunications and Information Administration (NTIA) for the Field Radar Coordination Program.

g. Engineering and maintenance of the Regional Office Executive Conference Room audio/visual equipment and the Regional Duty Officer's radio and wireline communication system, including the national HF SSB network equipment.

h. All functions specified in Order 6050.8, Radio Frequency Management Principles and Practices Handbook, Paragraph 12.e.(3) (h).

CHAPTER 2

4.-33. RESERVED.

CHAPTER 3. TRANSMITTER AUTHORIZATION AND DOCUMENTATION

SECTION 1. AUTHORIZATION PROCEDURES

34. GENERAL. Every transmitter on any frequency must be properly authorized and registered in accordance with IRAC procedures. To accomplish this requirement, AWP-406 has established two documentation procedures, one for fixed and a second for portable/mobile transmitters.

SECTION 2. FIXED TRANSMITTERS

35. DOCUMENTATION AND REQUESTS. Fixed radio transmitters shall be operated only if a current frequency authorization exists as indicated by WP Form 6050-1, Facility Transmitter Authorization (FTA) document (See Figure 3-1). Operation shall be limited to power, emission, frequency, and is specified for input to the antenna or power divider. Installed and operating power may be less.

a. New frequency requests shall be routed to AWP-406 on WP Form 6050-2, Request for Frequency Action (See Figure 3-2). The form must reach AWP-406 90 days before needed for transmitter tune-up.

b. WP Form 6060-5, Frequency Action Notice (See Figure 3-3) will be issued by AWP-406 as soon as frequency action has commenced to permit the action party to order the necessary crystals. As soon as final authorization has been received by AWP-406, WP Form 6050-1 Facility Transmitter Authorization (FTA) will be issued for the subject frequency, to tune-up the new equipment and to permit commissioning thereafter as soon as normal procedures permit. WP Form 6050-1-1, copy of FTA (See Figure 3-4), will also be issued for AF sector records. The FTA document shall be posted in the transmitter building, and mounted in a simple picture frame or placed in a plastic cover.

c. Each documment will contain the type of facility authorization and a serial number. Modification of frequency or other parameters will require issuance of a new document which will carry the same serial number, except a postcript letter will be added indicating particular revision of the original document. The serial number itself has no significance, except to establish a numerical identity for a particular facility. However, that number will remain with the facility regardless of the number of frequency changes, so long as the facility remains at that location.

d. When an FTA document is issued it will be sent to the appropriate AF sector, accompanied by a WP Form 6050-9, Facility Transmitting Authorization (See Figure 3-5). The FTA and WP Form 6050-9 will be retained by the AF sector until transmitter tune-up is imminent. At that time, the new (or modified) FTA will be posted to cover the transmitters. Upon commissioning, the WP Form 6050-9 will be completed and returned promptly to AWP-406 to indicate frequency commissioning/decommissioning.

e. Upon receipt of an FTA, the action party should check the actual facility installation as proposed against the FTA. Any deviation between the authorized parameters and installed parameters should be brought to the attention of AWP-406 immediately.

f. Special temporary frequency needs may require that action on frequency authorizations be taken more rapidly then the above procedure will permit. In these cases, AWP-406 will notify the appropriate parties by telephone, followed by a priority message. Such telephone or message information will constitute temporary authority to use radio frequencies. Such action will be followed by issuance of an appropriate FTA where the authorization is for a permanent facility.

36. DETAILS REQUIRED.

a. Documentation of any transmitter in any building is required. Therefore, when a frequency is required at two sites such as a RT site with backup at an ATCT, authorization is required at BOTH sites. WP Form 6050-2 must list location, including coordinates, of each site for which a separate frequency is requested. This includes regular, backup, and BUEC.

b. WP Form 6050-2 shall be used for receivers also, if the receiver is not colocated with its companion transmitter. This is essential in determining the possible intermodulation products from near-frequency equipment. This includes receivers which are at fixed locations in radio controlled systems such as MALSRs, gates, etc.

c. Radar frequency requests must include equipment model, pulse width, transmitter power, antenna rotation rate, antenna type and gain, and PRR limits. This applies to both primary radar and ATCRBS.

SECTION 3. PORTABLE AND MOBILE TRANSMITTERS

37. DOCUMENTATION AND REQUESTS.

a. The documentation for portable/mobile transmitters (transceivers) will be a different process. There are two basic categories:

(1) VHF/UHF Frequency Modulated (FM) systems used by Regional personnel to talk to one another for sector business.

(2) VHF/UHF Amplitude Modulated (AM) transceivers used to talk with flight inspection aircraft incident to flight checking a facility and with an Air Traffic Control Tower (ATCT) for safe travel on an airport.

b. An FM system base station installed in a fixed position such as AF sector headquarters is authorized to communicate with associated mobile units or other base stations. Repeater transmitters are fixed in location and authorized to operate without identification of their own call sign.

(1) Frequency requests for base, mobile, or portable transceivers should be submitted on WP Form 6050-2.

(2) AWP-406 will supply blank FAA Form 6050-2s, Transmitter Identification and Operation Authorization (TOIA), to the Sector Frequency Coordinator (SFC). He will assign a discrete call for each transmitter per Paragraph 38 below. The TOIA will be prominently displayed on the transceiver.

(3) Repeater frequency requests shall likewise be submitted on WP Form 6050-2, but a WP Form 6050-1 FTA will be issued to post in the room (usually remotely located) where the repeater is located.

38. ASSIGNMENT OF CALL SIGNS. Station call signs (See Figure 3-6) will be assigned by the individual SFCs for each transmitter in their sector. The assigned call will be placed on the FAA Form 6050-2 (Paragraph 37b. (2) by the SFC in accordance with the following:

a. The basic call will consist of "FAA-4-XXXX". It will be typed on the form before attaching it to the transmitter.

b. The four digits following "FAA-4-..." will be assigned at the discretion of the SFC, using any sequence he desires from within the series assigned his sector:

AF SECTOR	CALL SIGN BLOCK
Golden Gate	FAA-4-3500 - 3999
Golden Gate	FAA-4-6500 - 6999
Lancaster	FAA-4-1500 - 1999
Las Vegas	FAA-4-2000 - 2499
Las Vegas	FAA-4-5000 - 5499
Los Angeles	FAA-4-3000 - 3499
Phoenix	FAA-4-4000 - 4499
Sacramento	FAA-4-1000 - 1499
Sacramento	FAA-4-4500 - 4999
Sacramento	FAA-4-5500 - 5999
San Diego	FAA-4-2500 - 2999
San Diego	FAA-4-6000 - 6499

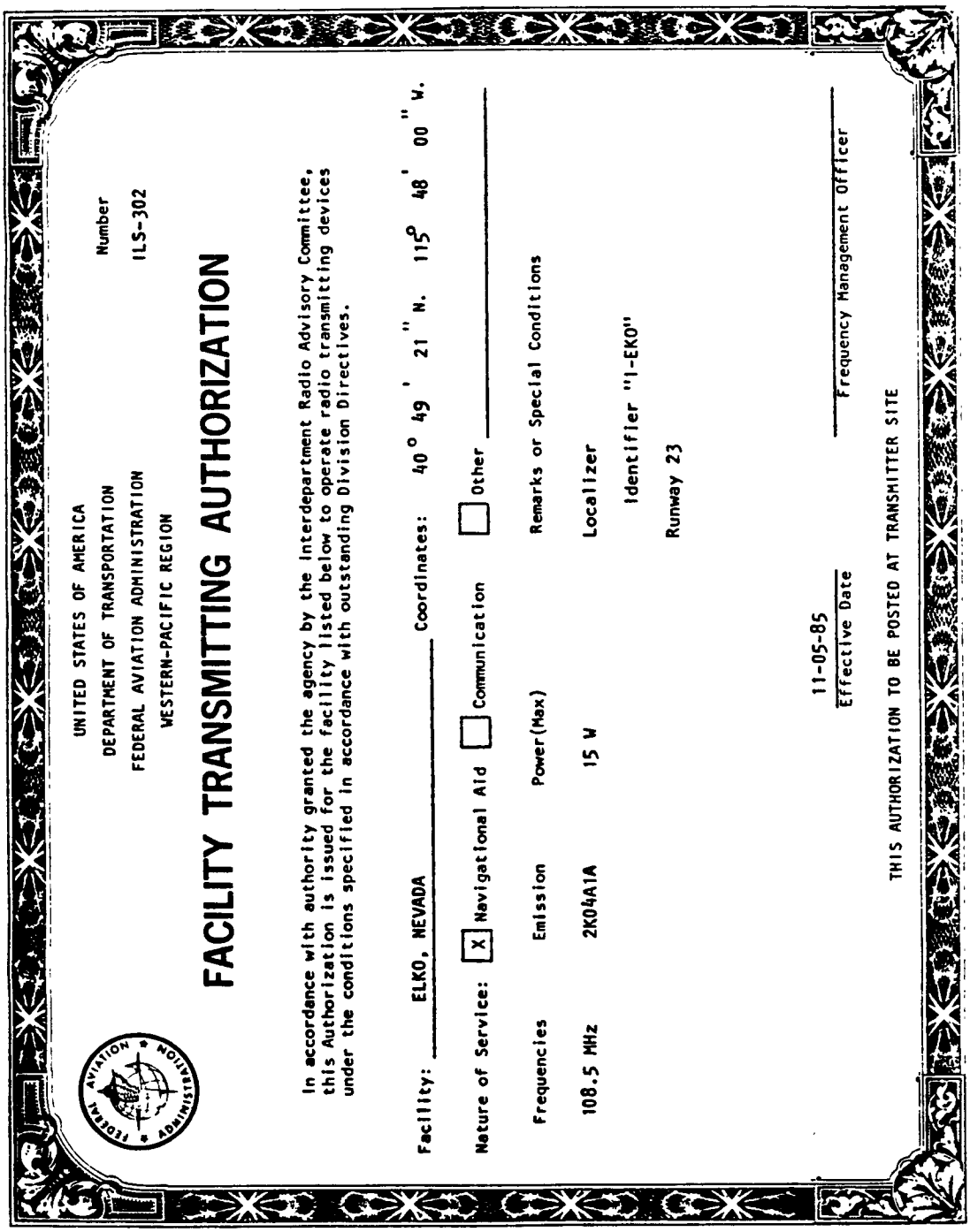
AF SECTOR	CALL SIGN BLOCK
San Diego	FAA-4-7000 - 7499
Los Angeles ARTCC	FAA-4-7500 - 7549
Oakland ARTCC	FAA-4-7550 - 7999

c. The SFC is responsible for keeping accurate records of calls assigned. To permit AWP-406 meeting IRAC requirements, the SFC shall complete WP Form 6050-8 (See Figure 3-7). The form must be a complete and accurate list of all calls currently assigned. The master list shall be retained by the SFC, and a complete updated copy submitted to AWP-406 by July 1 each year. After the initial submission, the call signs do not have to be in numerical sequence.

d. Assignment of call signs to all regional elements other than AF sectors will be handled directly by AWP-406.

39.-40. RESERVED.

FIGURE 3-1. SAMPLE WP 6050-1



UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WESTERN-PACIFIC REGION

Number
ILS-302

FACILITY TRANSMITTING AUTHORIZATION

In accordance with authority granted the agency by the Interdepartment Radio Advisory Committee, this Authorization is issued for the facility listed below to operate radio transmitting devices under the conditions specified in accordance with outstanding Division Directives.

Facility: ELKO, NEVADA Coordinates: 40° 49 ' 21 " N. 115° 48 ' 00 " W.

Nature of Service: [X] Navigational Aid [ ] Communication [ ] Other _____

Frequencies	Emission	Power(Max)	Remarks or Special Conditions
108.5 MHz	2K04A1A	15 W	Localizer Identifier "I-EKO" Runway 23

11-05-85
Effective Date

Frequency Management Officer

THIS AUTHORIZATION TO BE POSTED AT TRANSMITTER SITE

WP Form 6050-1 (4/82)

FIGURE 3-2. SAMPLE WP FORM 6050-2

REQUEST FOR FREQUENCY ACTION

TO: MANAGER, TELECOMMUNICATIONS STAFF, AWP-406 DATED: 11/05/85

FROM: SIGNED:

FACILITY OWNER: FAA

FLIGHT STANDARDS PROCEDURES YES X NO ____

FACILITY AND IDENTIFIER	SITE ESV MSL	ANT ELV AGL	GEOGRAPHICAL COORDINATES	XMT/RCV (CHECK)	EQUIPMENT TYPE	POWER (WATTS)	USE
Elko, NV (1-EKO)	5135'	8'	40° 49' 20.9" N 115° 48' 0.1" W	X /	Wilcox MK 1F	15	Localizer

TRANSMIT ANTENNA: LPD (TYPE) 17 (GAIN (DB)) 74° (AZIMUTH)

RECEIVE ANTENNA: ____ (TYPE) ____ (GAIN (DB)) ____ (AZIMUTH)

REMARKS:

EMISSION:____

PULSE WIDTH:____

PULSE REPETITION RATE:____

REQUIRED DATES: FROM____ TO____

COORDINATES CHECKED BY:____ ESTIMATED COMMISSIONING DATE: 2/20/86

WP FORM 6050-2 (2/86) (OBSOLETES PREVIOUS EDITION)

FIGURE 3-3. SAMPLE WP FORM 6050-5

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WESTERN-PACIFIC REGION

DATE: 08-19-85

SUBJECT: Frequency Action Notice

TO: Manager, Airway Facilities Sector-Las Vegas, Nevada
Attn; Sector Frequency Coordinator

Action has been initiated for:

125.75 MHz	for	Bishop, California	VOR
(Frequency)		(Facility)	(Type)

10 Watts	6KA3E	RCAG	BIH
(Rated Power)	(Emission)	(Use)	(Identifier)

DO NOT COMMISSION UNTIL FACILITY TRANSMITTING AUTHORIZATION DOCUMENT (WP Form 6050-1) IS RECEIVED!

REMARKS:

Frequency Management Officer

cc: AWP-450
460
510
540
AFS LAS VEGAS

The Radio Spectrum
is a Finite and Vital Natural Resource
Conserve It.

WP Form 6050-5 (6/82) (Obsoletes Previous Edition)

FIGURE 3-4. SAMPLE WP FORM 6050-1-1

COPY
OF
TRANSMITTER AUTHORIZATION

Authorization Number
ILS-302

The specifications itemized below comprise the only authorized parameters for the indicated facility.

Facility ELKO, NEVADA Coordinates 40 49 21 115 48 00

Nature of Service X Navaid ___ Comm ___ Other

Frequencies	Emission	Power(Max)	Remarks or Special Conditions
108.5 MHz	2K04A1A	15 W	Localizer Identifier "I-EKO" Runway 23

11-05-85
Date

Frequency Management, AWP-406

WP Form 6050-1-1 (8/82) (Obsoletes Previous Edition)

FIGURE 3-5. SAMPLE WP FORM 6050-9

DATE: 11/05/85

SUBJECT: Facility Transmitting Authorization

TO: Manager, Airway Facilities Sector-Las Vegas, Nevada
Attn: Sector Frequency Coordinator

The enclosed Authorization, Document Number(s) ILS-302

is for posting at the Elko, Nevada site.

☐ Return superseded Document Number(s) _____ to this office.

☒ Initial Document issuance, return of superseded Document not applicable.

Frequency Management Officer, AWP-406

Enclosure

Elko, Nevada ILS/LOC

AIRWAY FACILITIES SECTOR - COMPLETE THIS PORTION OF FORM AND RETURN TO AWP-406

DATE: 1/10/86

Frequency 121.6 MHz Commissioned 12/20/85 (Date)

Frequency _____ Decommissioned _____ (Date)

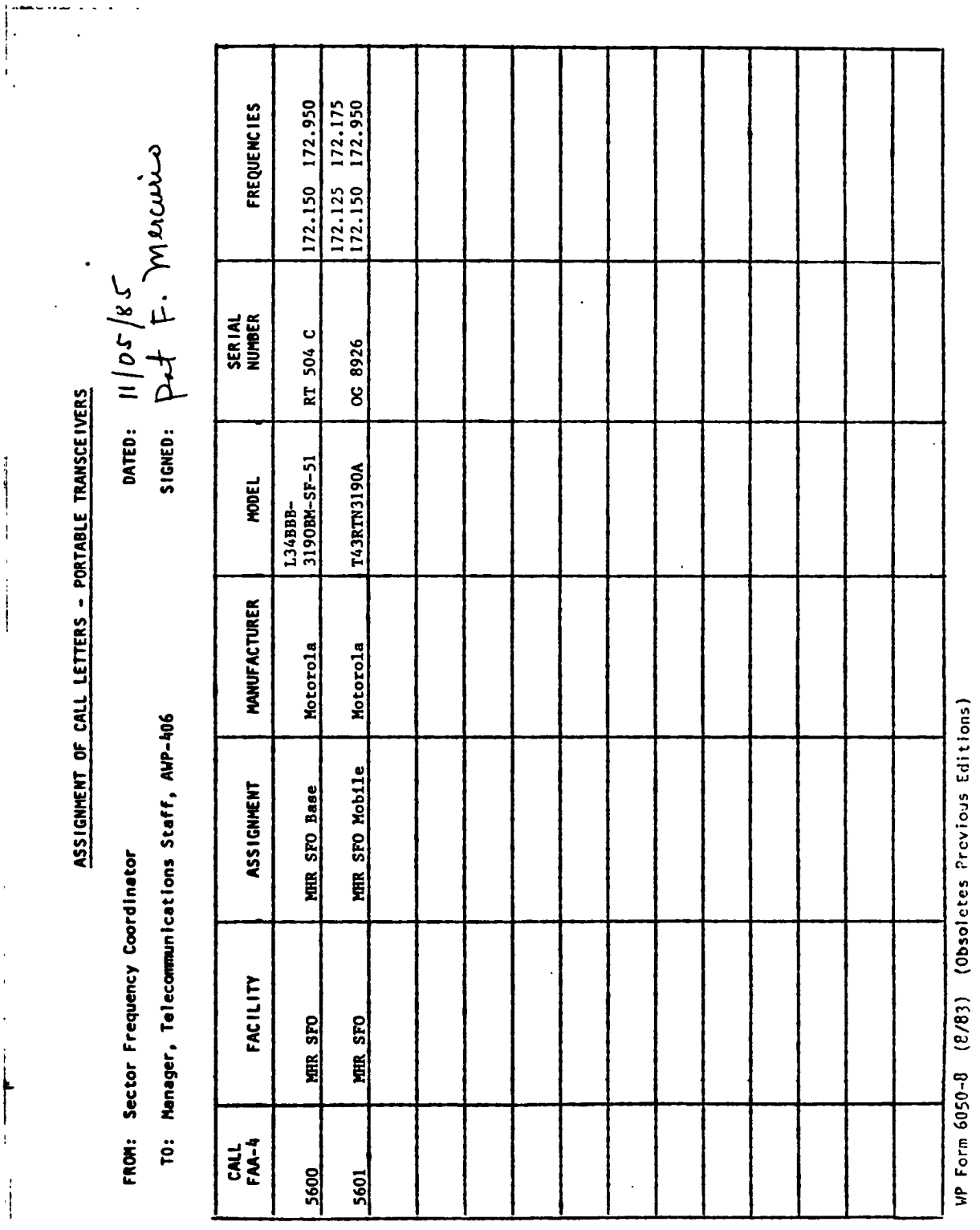
Other Actions _____

John Doe
Sector Frequency Coordinator

WP Form 6050-9 (4/86) (Obsoletes Previous Editions)

FIGURE 3-6. SAMPLE FAA FORM 6050-2

FIGURE 3-7. SAMPLE WP FORM 6050-8



ASSIGNMENT OF CALL LETTERS - PORTABLE TRANSCEIVERS

FROM: Sector Frequency Coordinator DATED: 11/05/85

TO: Manager, Telecommunications Staff, AWP-406 SIGNED: Pat F. Mercurio

CALL FAA-4	FACILITY	ASSIGNMENT	MANUFACTURER	MODEL	SERIAL NUMBER	FREQUENCIES
5600	MHR SFO	MHR SFO Base	Motorola	L34BBB-3190BM-SF-51	RT 504 C	172.150 172.950
5601	MHR SFO	MHR SFO Mobile	Motorola	T43RTN3190A	OC 8926	172.125 172.175 172.150 172.950

WP Form 6050-8 (8/83) (Obsoletes Previous Editions)

CHAPTER 4. COMMUNICATION FREQUENCIES

SECTION 1. VHF AIR-TO-GROUND (A/G) AND GROUND-TO-AIR (G/A)

41. FUNCTIONAL BREAKDOWN. The frequency band used for communication with all civil and some military aircraft is from 118.00 through 135.975 MHz in 25 kHz steps (e.g., 118.00, 118.025, 118.050, etc.). Until 1977, only 50 kHz channels (e.g., 118.00, 118.050, etc.) were used. These frequencies are used by all types of FAA ATC facilities, ARTCC, TRACON, RAPCON, RATCF, ATCT, FSS. The entire band is shared with non-federal users, although frequency engineering is done by FAA and supplied to FCC for their licensing of the non-federal user. Some portions of the band are exclusively reserved for non-federal users. A simplified breakdown of the band is as follows:

FREQUENCY (MHz)	USE
118.000-121.400	Terminal and Enroute G/A Communications
121.500	International Aeronautical Emergency
121.600-121.925#	ATCT Ground Control#
121.950	Non-Federal Flight Test
121.975-123.075	FSS, Non-Federal Unicom/Multicom
123.100	International Search and Rescue (SAR) and Certain Special Functions.
123.125-123.575	Non-Federal Flight Test and Flight School
123.600-128.800	Terminal and Enroute G/A Communications
128.825-132.000	Non-Federal Airline Business Use (ARINC)
132.025-135.975*	Terminal and Enroute G/A Communications

*135.850/135.950 FAA Flight Inspection/AFS Ground Personnel
#Other frequencies 118.0-135.9 may be assigned for ground control

SECTION 2. UHF AIR-TO-GROUND (A/G) AND GROUND-TO-AIR (G/A)

42. FUNCTIONAL BREAKDOWN. The limits of the band used by all military services principally for communication are 225.000 - 399.950 MHz. The band is exclusively for military use with few exceptions. To facilitate air traffic control of tactical aircraft that are normally UHF -only equipped, the military has given certain discrete frequencies to FAA within this band. These frequencies are engineered by FAA for best spectrum utilization. All terminal requirements are met by frequencies separately supplied by the military. A simplified breakdown of FAA use of the band is as follows:

FREQUENCY (MHz)	PRIMARY USE
225.00 - 328.60*	G/A Communications
328.60 - 335.40	ILS Glide Path
335.50 - 399.90*	G/A Communications

*279.5, 380.0, 380.1 FAA Flight Inspection/AFS Ground Personnel

SECTION 3. USE OF BASE, PORTABLE AND MOBILE STATIONS (BP/M)

43. VHF/UHF AERONAUTICAL FREQUENCIES. This category of operation is limited to the range of 118.00 - 135.975 and 225.00 - 399.95 MHz. Emission is Amplitude Modulation (AM) and power is normally limited to 10 watts or less. The function is strictly for control of ground vehicles by ATCT, communication with ground vehicles by FSS, communication between FAA ground vehicles, and FAA Flight Inspection aircraft incident to a flight inspection. Any other communication in this range by BP/M stations including vehicle-to-vehicle is PROHIBITED. If duly authorized as evidenced by an attached TIOA FAA Form 6050-2 (Chapter 3, Figure 3-6), the following frequencies ONLY may be used as indicated:

FREQUENCY (MHz)	FUNCTION
121.600-121.925 (or other 118 0-135.95 frequency)	Communication with the ATCT upon the airport with the ground vehicle. Only communication for safe passage on the airport is permitted.
123.600-123.650	Communication with an FSS on an airport for air traffic advisories to assist ground vehicle driver in decisions of driving on runways/taxiways where no ATCT exists.
135.850 or 135.950	Communication with Flight Inspection ai craft incident to a facility flight inspection.

Special Note: At part time ATCT/FSS airports, local control and ground control frequencies are authorized for FSS advisory service during ATCT off duty hours. Portable and mobile stations are authorized use of the appropriate discrete frequency per this special FSS frequency use.

279.5, 380.1 Communication with Flight Inspection aircraft incident to a facility flight inspection.

Special Note: 121.5 and 243.0 are NOT authorized by ground mobile units for any use.

SECTION 4. UTILITY FREQUENCIES FOR OFFICIAL BUSINESS

44. GENERAL PURPOSE. The following frequencies are authorized for any official FAA business where BP/M is required. Vehicle-to-vehicle and any combination of base -portable -mobile communication is permitted. Amplitude emission (AM) is limited to 3 kHz max modulation, resulting in a 6A3 emission characteristic. Frequency Modulation (FM) is limited to 5 kHz deviation, resulting in a 16F3 characteristic.

FREQUENCY (MHz)	MAX POWER	EMISSION	REMARKS
27.575/27.585	5 Watts	6A3	Shared With Other Gov't Agencies
27.625/27.665	5 Watts	6A3	Exclusive Use by FAA
166.175	50 Watts	16F3	Exclusive Use by FAA
408.825	50 Watts	6A3	Exclusive Use by FAA

Special Note: "Citizens-Band" transceivers operating on any of the 40 channels between 26.965 - 27.255 MHz are solely for use by private citizens. Use by any FAA employee for FAA business is PROHIBITED.

45. REGIONAL FM NETWORK. Special frequencies have been set aside for certain non-aeronautical functions. They are for voice/tone communications for FAA business and may be phone-patched provided TELCO termination has been arranged by AWP-406.

FREQUENCY (MHz)	DESIGNATED USE
165.6375	Security Simplex (National)
166.175	General Purpose Simplex
172.125/172.925	Regional Network Repeater Uplink/Downlink
172.150/172.950	Regional Network Repeater Uplink/Downlink
172.175/172.975	Regional Network Repeater Uplink/Downlink
172.825	FMP Simplex and Sector Local Paging
172.850	*Restricted
172.875	**F&E Simplex and Security Simplex

*Restricted use on non-interference to Mexico, co-channel.
**During a security emergency, Security Division has priority.

46. SPECIAL FM NETWORKS. Special use FM nets will be authorized by AWP-406.

SECTION 5. EMERGENCY

47. HIGH FREQUENCY (HF) SINGLE SIDEBAND (SSB) NETWORKS. To provide for emergencies where catastrophic loss of wire communications might occur, long distance communications capability is needed. The Regional Emergency Network provides communications between Centers, the Regional Office, the Regional relocation site, the AF SAIL Van, and other Regions. This network is a part of the National Emergency Communications System. Authorized emission is upper or lower sideband, suppressed carrier resulting in a 3A3J characteristic. The following HF frequencies are authorized:

a. 1kw (PEP) - 3A3J Emission - 4055, 7475, 13626, 16280 kHz.

Authorized stations: Oakland ARTCC, Los Angeles ARTCC, Regional Duty Officer. Authorized points of communication: Each other, other Region Duty Officers, other ARTCCs, Washington HQ, and the AF SAIL Van.

b. Due to NTIA procedural difficulties, each SSB frequency as authorized by NTIA is 1.5 kHz above the reference carrier frequency. For instance a reference carrier frequency of 4055 kHz, upper sideband is listed by NTIA as 4056.5 kHz. However, for use within the Region, the reference carrier frequency will appear on all transmitter documents.

48. EMERGENCY LOCATOR TRANSMITTER (ELT) TESTING. Civil Air Patrol, Sheriff's Aero Squadrons, and other Search and Rescue Organizations require training in air search for locating downed aircraft with a radiating ELT. Special procedures have been provided to authorize use of a special ELT on frequencies 121.600 to 121.925 MHz. Any SAR organization requiring such test/training should be referred to AWP-406.

49. PERSONNEL USE OF RCAG/FSS VHF. At some rather remote areas, there could be conditions where personnel need some form of voice communication to summon aid in the event of personal injury or hazard. In these cases, a mobile/portable unit may be authorized to install a regular A/G frequency (Chapter 4, Section 1) upon request to AWP-406. Use of that frequency to contact a nearby RCAG or FSS is strictly limited to safety of life and property communications.

50. SCENE OF ACCIDENT COMMUNICATIONS. A group of frequencies has been authorized for communications incident to the scene of an aircraft accident at remote locations. They are:

FREQUENCY (MHz)	EMISSION	POWER MAXIMUM
3331, 4055, 5860	3A3J	150w (PEP)
165.750, 166.175	16F3	5w

The equipment is packaged in a Regional "Fly-Away Kit." Scene-of-accident communications have priority.

SECTION 6. SPECIAL USE

51. TEMPORARY TOWERS. "Fly-in" and certain other special AT functions require the use of frequencies at a temporary ATCT operated by AT controllers. Upon AT request, AWP-406 will authorize the required frequencies. Transceivers used are normally 360 - channel portable units supplied by the AF sector. AWP-406 will notify the appropriate sector of the selected frequencies in advance of the requirement.

52. FOREST FIRES. VHF A/G frequencies are required occasionally by forest agencies (e.g., United States Forestry, State Forestry, Bureau of Land Management, etc.) to control aircraft which are water-dropping raging fires. AWP-406 will authorize their use of some frequencies during the emergency period. While every attempt will be made to authorize frequencies which will not interfere with ATC operations, some cases may occur during the height of the emergency. Facilities so affected should immediately notify AWP-406.

53. TESTING OF V/UDF EQUIPMENT. Regular VHF/UHF frequencies used in V/UDF require periodic testing and azimuth calibration. Use of discrete frequencies in portable/mobile transceivers or other low power devices for such testing is permissible without further authorization provided: (1) Transmitter radiation is limited to absolute minimum time required and (2) The controlling AT facility is notified and concurs.

54. OTHER SPECIAL USE. AWP-406 will authorize frequencies for special use as required.

55. METHODS. All transmitters capable of being identified by voice transmission shall be identified by announcing the assigned call sign at periodic intervals.

a. VHF/UHF F/A transmitters (Chapter 4, Sections 1-3 and Section 5, Paragraphs 49 and 50) shall be identified by the words "Mobile FAA-4-XXXX" utilizing the four digit number following the "-4-" as indicated on the FAA Form 6050-2, Transmitter Identification and Operation Authorization (e.g., "Mobile FAA-4-1392"). The identification shall be made at the beginning and ending of a communication operation or at 15 minute intervals.

b. Identification of transmitters in the non-aeronautical bands (Chapter 4, Section 4) shall be the same as (a) above except the word "mobile" is not required.

c. HF SSB transmitters (Chapter 4, Sections 17 and 20) shall identify at the beginning and end of each transmission, using the call sign shown on the WP Form 6050-1, Frequency Transmitting Authorization (e.g.,"..... this is KJK 70").

d. Special use operations shall be identified in the manner of class of operation as described in a, b, and c above, or as authorized by AWP- 406.

56.-60. RESERVED.

CHAPTER 5. NAVIGATIONAL AIDS (NAVAID) FREQUENCIES

SECTION 1. NON-DIRECTIONAL BEACONS

61. CLASSES AND BANDS. The bands 200-285 and 325-405 kHz are allocated nationally for all Low/Medium Frequency (L/MF) facilities; e.g., Homer, H, HW, TWEB, COMLO. The specific frequency is selected by standard frequency engineering criteria. The 285-325 kHz band is primarily allocated to the Maritime Navigation Service and available to FAA only under certain conditions.

SECTION 2. VOR/TACAN/DME/ILS/VOT/AVOT

62. RANGE AND PAIRING.

a. VORs are allocated even-decimal and even-half-decimal from 108.0 to 111.85 MHz and every decimal and half-decimal from 112.00 to 117.95 MHz

b. ILS localizers are allocated odd-decimal and odd-half-decimal between 108.1 and 111.95 MHz. The Glide Path band is 328.6-335.4 MHz with a mixed paired allocation.

c. DME and TACAN frequencies are paired with VOR/ILS by ICAO standards, except TACAN channels 1-16 and 60-69, which are unpaired and authorized for ical military use only. A comprehensive ICAO frequency pairing chart is nded to this chapter.

d. VOTs and AVOTs are assigned on regular VOR frequencies.

SECTION 3. MARKERS

63. SPOT FREQUENCY. All markers operate on 75.0 MHz. Inner (IM), Middle (MM), Outer (OM), and Fan (FM) are categorically identified by different Morse Code class identifiers.

SECTION 4. MICROWAVE

64. FUTURE. Microwave ILS has been implemented on a test basis only and standards have been established. Eventually, frequencies will be assigned in the 5.0-5.25 GHz range.

65.-70. RESERVED.

CHAPTER 6. RADAR FREQUENCIES

SECTION 1. SURVEILLANCE

71. AIR ROUTE SURVEILLANCE RADAR (ARSR). The band 1300-1350 MHz is allocated exclusively for ARSR service. AWP-406 assigns a spot frequency + 2.5 MHz in that band for each Regional ARSR. In the case of a Joint Surveillance System (JSS) where the type of Radar permits, an additional spot frequency in the 1215-1300 MHz range is authorized, subject to only limited protection from outside interference. ARSR-3 Radars are authorized for diplex operation.

72. AIRPORT SURVEILLANCE RADAR (ASR). The band 2700-2900 MHz is allocated for ASR service. A spot frequency ±5 MHz is assigned by AWP-406. ASR-8 Radars have two spot frequencies assigned, at least 60 MHz separated, since they are designed for diplex operations. National Weather Service Radars have equal rights, but are subject to spot frequency coordination with AWP-406.

73. AIR TRAFFIC RADAR BEACON SYSTEM (ATCRBS).

a. The spot frequency 1030 MHz transmit and 1090 MHz receive are allocated for ATCRBS. The system has had many names: "Radar Beacon", "SECRA" (SECondary Radar), and the original "IFF" (Identification - Friend or Foe) from its WW II origin. The military still uses the nomenclature IFF/SIF.

b. The entire NAS automated system is keystoned upon ATCRBS, since it not only reinforces Radar reflections, but is the only source of automatic aircraft altitude reporting. It is universally used by all aircraft (civil and military) and is a ground interrogate/air transpond system which magnifies its interference susceptibility tremendously, as compared to conventional Radar. ATCRBS/-IFF is very strictly controlled and is done so by Pulse Repitition Rate (PRR) and power limitation. The legal maximum PRR is 450 pps for all users. A specific PRR is assigned each FAA ATCRBS and cannot be changed except through AWP-406. All military IFF have the same restriction. (See Paragraph 79). Enroute ATCRBS/IFF are limited to 1.5 Kw and as much less as possible. Terminal ATCRBS/IFF are normally limited to 300 W or less to minimize interference.

74. SURVEILLANCE SYSTEM SPECTRUM PLOTS. As part of the Joint Acceptance Inspection (JAI) process, AWP-406 will take spectrum plots of the radar sensors. Timing will be coordinated between AWP-450 and AWP-406 and shall be prior to the facility commissioning flight check. This will allow for optimization of the system prior to commissioning flight check.

SECTION 2. SPECIAL AND NEW FUNCTIONS

75. AIRPORT SURFACE DETECTION EQUIPMENT (ASDE). The band 24.24-25.25 GHz is allocated for ASDE. Only a few ASDEs are operating in the Region and are on other frequencies on a temporary or "grandfather" basis. Other bands may be allocated at the next International Conference.

76. PRECISION APPROACH RADAR (PAR). The band 9000-9200 MHz is allocated for PAR. This same band is used by the military for the same purpose, but their nomenclature is Ground Control Approach (GCA).

77. NEW SHARED BAND. The band 3500-3700 MHz has been reallocated to include Aeronautical Radio Navigation, which is the international term for those Radars we use in Air Traffic Control. This band is available only when 2700-2900 MHz has no frequency available for a requirement.

78. RADAR MICROWAVE LINK. The primary RML band in use for FAA Radars is 7125-8400 MHz. The band 14.5-15.35 GHz is also available and now being used where no frequency is available in 7125-8400 MHz. Individual spot frequencies are assigned by AWP-406 for each site.

SECTION 3. NTIA FIELD RADAR COORDINATION

79. THE NTIA (Paragraph 1a) has designated FAA as their field coordinators for all users of the bands 1030/1090, 1215-1400, 2700-2900 and 9000-9200 MHz. No user (civil, federal, or military) will be authorized use of any of these bands until coordination has been completed. Through AES-510, this authority has been delegated to AWP-406 in the Western-Pacific Region. All inquiries concerning non-FAA use of these bands shall be referred to AWP-406.

80. CLASSIFICATION OF RADAR PARAMETERS. USAF has determined that parameters of Radar operation which can be determined from the radiated signal are not classified. This includes, but is not limited to, frequency, PRR, antenna radiation pattern, and spectrum emission.

CHAPTER 7. RADIO FREQUENCY INTERFERENCE

SECTION 1. INTRODUCTION AND PROCEDURE

81. INTERFERENCE REPORTING. When interference to any FAA facility is noted by any FAA personnel, the condition should be handled as follows:

a. Air Traffic and Flight Standards. Refer interference problems to local sector maintenance personnel as soon as noticed.

b. AF Sector Maintenance Personnel. Take immediate appropriate action as directed by the situation. If the situation cannot be cleared by local effort, call the Sector Frequency Coordinator. DO NOT call FCC unless authorized to do so by Frequency Management, AWP-406.

c. Frequency Interference Report (FAA FORM 6050.3). Complete the Form 6050.3 detailing the interference to the extent known (See figure 7-1). Make distribution as indicated on the form.

82. INTERFERENCE PROBLEMS are numerous and endless. No one handbook, regardless of size, could describe symptoms and resolutions of all known problems. But certain basic considerations and procedures should be applied to any interference problem to form a solid basis for thoroughly understanding the problem to preclude jumping to conclusions as to a resolution. At least the following questions must be answered to provide that basis:

a. Is the Interfering signal "on channel"?

(1) In Radar, this is usually the case. While the center operating frequency of the source is frequently a few MegaHertz removed from the affected Radar, the source bandwidth will easily "hit" the affected receiver.

(2) In Communications, the interference source can be "on channel", but more frequently can be an "image" frequency of the receiver or actually a result of a third-order or higher mix. Frequently, brute force desensitization of a receiver front-end results in severe blanketing, even though the source is non-harmonically related and far removed from the affected frequency. The CAUSE must be determined accurately before resolution can be effected.

b. Is the receiver or interfering transmitter at fault?

(1) Is the transmitter (or interference source) actually radiating on the frequency to which the receiver is tuned? If so, resolution must be concentrated on reducing or eliminating this transmitter spurious radiation.

(2) Is the receiver responding to other than its intended-to-be received frequency? If so, the receiver or receiving conditions must be modified or improved.

(3) Determination of the above is absolutely essential, particularly when an interference source is outside the agency since the basic premise of "CAUSE must be resolved" is strictly adhered to.

c. What solutions are possible other than a frequency change?

(1) Because of inevitable chain reactions, a frequency change to eliminate an interference problem will be accomplished ONLY AS A LAST RESORT.

(2) There are actions that can be taken at the local level to expedite resolution.

(a) Where the source is known to be FAA equipment, site separation should be tried after authorization for the exchange has been procured from AWP-406.

(b) If the source is other than FAA, make an attempt to identify it. Then advise the appropriate SFC.

(3) If the source cannot be identified by monitoring, the SFC should be notified immediately. Only through AWP-406, the FCC mobile DF may be available, other military DF airborne assistance may be procured, or AWP-406 may provide direct assistance.

(4) In all cases, a little time spent in serious analysis and evaluation of the problem will save many hours of wasted time later.

d. A Spectrum Analysis and Interference Locator (SAIL) Vehicle is operated by AWP-406 personnel. In addition to Spectrum Analysis and Antenna Pattern plotting, it is useful in certain types of interference resolution. If an unresolved interference problem exists, a telephone call or a speed memo from the SFC to AWP-406 outlining the problem will place your sector on the priority van schedule.

83. FCC LIAISON.

a. References.

(1) 6050.8, Radio Frequency Management Principles and Practices.

(2) 6050.18, Federal Communications Liaison.

b. Background. In years past, the FCC has periodically requested that liaison contacts in the fields be accomplished through a specific point source to prevent a series of requests from various individuals, leading to confusion rather than coordination. To that end, various interagency agreements have ensued.

c. Procedure.

(1) Frequency Management (AWP-406) and the SFC (when authorized by AWP-406) are sole contact points in the Region for liaison with FCC for all frequency management, assignment, and interference matters.

(2) In doubtful circumstances, particularly after regular office business hours, contact the Regional Duty Officer for proper channeling of your call.

(3) When FCC originates action with any field personnel involving problem areas, the problem should be immediately brought to the attention of the Sector Frequency Coordinator, who will immediately advise Frequency Management (AWP-406) directly or through the Regional Duty Officer.

84.-90. RESERVED.

SECTION 2. GENERAL

91. TRANSMITTER OPERATING FREQUENCIES.

a. There are times when a simple solution to an interference problem is to change frequency, such as "exchanging" frequencies end-for-end on a VHF/UHF link. This type of unauthorized operation, while it may solve a local FAA problem, can cause serious repercussions in the form of interference to other FAA and non-FAA radio facilities, possible resultant loss of life and property, and criticism to FAA.

b. Western-Pacific Region radio transmitters will be limited to the operating parameters and location indicated on the current Facility Transmitter Authorization WE Form 6050-1 (Chapter 3, Section 2, Figure 3-1).

c. Transmitter power as listed on the FTA is the maximum, not necessarily the operating power, authorized at that particular location and represents the power level when measured at the feed point of the antenna.

92. NON-FAA TRANSMITTERS ADJACENT TO FAA SITES. Although FAA does not always procure sufficient land to permit proper separation of undesired transmitters for effective interference prevention, the following 3 conditions are considered desirable:

a. Transmitter(s) and antenna(s) must be 1,000' from the FAA equipment and antenna site.

b. Antennas or buildings so installed that the top of their tower (including antenna) or buildings shall be below the FAA radiating system.

c. Equipment shall not cause harmful interference. In the event of ANY interference which occurs to the FAA as a result of the other user's operation, the other user shall cease operation until interference is eliminated and shall stand any expense incurred in the correction thereof.

93. INTERFERENCE REPORTING FORMS. FAA Form 6050-3 will be used in reporting all cases of interference, whether solved or unsolved, as soon as possible after interference begins. Instructions for completing and routing the form are printed on the back of Copy 5. After the form has been completed, send Copies 1 and 4 to AWP-406. The remaining copies are retained at the sector/sector field office for future data. See figure 7-1.

94.-110. RESERVED.

FIGURE 7-1. SAMPLE FAA FORM 6050-3

RIS: AF 6050-16

THRU [Responsible Local AF Office]	DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION FREQUENCY INTERFERENCE REPORT		
SAC AFS			
TO [Routing Symbol] FMO AWP-406	FROM: SAC AFSFO	SIGNATURE OF ORIGINATOR Jane Doe *Jane Doe*	DATE 1-26-86

1. GENERAL

THIS BLOCK TO BE COMPLETED WHEN REPORTING ANY TYPE RADIO FREQUENCY INTERFERENCE

a. NAME OF AFFECTED FACILITY: SMF ATCT

b. DURATION [Date/Time] — STARTED: 25 / 1300Z — CLEARED: 25 / 1830Z

c. NOTAM ISSUED: ☐ YES ☒ NO

d. FACILITY OPERATION: ☐ USABLE ☒ USABLE WITH DIFFICULTY ☐ UNUSABLE

e. INTERFERENCE DESCRIPTION

(1) SOURCE: AIRCRAFT

(2) TYPE: ELT

(3) INTENSITY: STRONG

2. RADAR

THIS BLOCK TO BE COMPLETED WHEN REPORTING INTERFERENCE TO RADAR

a. INTERFERENCE AZIMUTH: °

b. RADAR CHANNEL IN USE WHEN INTERFERENCE STARTED .....: CHANNEL

CHANNEL CHANGE MADE: ☐ NO ☐ YES → ANY IMPROVEMENT: ☐ YES ☐ NO

c. OPERATING FREQUENCY: CHANNEL A ____ MHz CHANNEL B ____ MHz

3. OTHER

THIS BLOCK TO BE COMPLETED WHEN REPORTING INTERFERENCE TO COMMUNICATION OR NAVIGATION AIDS

a. AFFECTED FREQUENCY	b. TYPE STATION [If airborne, show identification, location, and altitude of aircraft]	c. TYPE EQUIPMENT INVOLVED [See Instructions]
121.5 MHz	☒ GROUND ☐ AIRBORNE →	AN/CRR-23

4. CORRECTIVE ACTION

☒ TAKEN, ☐ PLANNED, ☐ SUGGESTED BY LOCAL AIRWAY FACILITIES OFFICE

Aircraft was Piper Cherokee, N1064W, owned by Roger Dribble,
1085 Stacking Blvd, Sacramento, Ca.
Aircraft was parked in tie down area in front of Tower.
Notified Fixed Base Operator who then deenergized the ELT.
Notified GADO (TC).

John Doe *John Doe*
Signature of Responsible Local AF Official

Prepare attachment if additional space is required

FAA Form 6050-3 (7-73) Supersedes all local forms

Frequency Management Officer — 1

CHAPTER 8. INFORMATION TIPS (INFO TIPS)

SECTION 1. GENERAL

111. PURPOSE. Frequency Management (AWP-406) issues "tip" type information covering its operation. Therefore, from time to time these small but important types of information will be issued under Chapter 8 for inclusion in this Handbook. This data will be referred to as "Info Tips".

112. ATCRBS (SECRA) (IFF) PARAMETERS. Since all radar beacon interrogators operate on 1030 MHz, special attention must be given to reducing interference potential. For this reason, FAA Frequency Management is responsible for the assignment of Radar PRR. The details are delineated in 6050.9, Radar/Beacon Pulse Repetition Frequency (PRF) Assignment Criteria and Processing Actions.

113. "CITIZEN'S BAND" FOR FAA. Some activities have procured or ordered portable or hand-carried low-powered transceivers designed to operate in the "Citizen's Band" in the 27 MHz band. (See special note Paragraph 44). Not only are "Citizen's frequencies not interference-protected in any way, but they are primarily designed for use by the private citizen. An agency-wide frequency authorization for 27.575, 27.585, 27.625, and 27.665 MHz has been procured and is to be used for these units. Maximum power shall be 5 watts. Authorization by AWP-406 will be indicated by Transmitter Identification and Operation Authorization as outlined in Chapter 3, Paragraph 37 of this Handbook.

114. FREQUENCY SALVOING.

a. "Salvoing" is the simultaneous use of two or more communication frequencies when only one is required. This occurs at all FAA communication facilities when keys are switched together.

b. Under National Rules and Regulations and International Treaties, "salvoing" is considered "superfluous transmission", and as such, is prohibited.

115. TESTING ON EMERGENCY CHANNELS.

a. Excessive and unnecessary testing on 121.5/243.0 MHz derogates the basic emergency function of these two frequencies.

b. AF sector routine maintenance will confine radiation to the barest minimum consistent with effective maintenance. Power and modulation tests will be made with a dummy load. The briefest possible operational check will be made when restoring the channel to normal operation. Transmission to not exceed 15 seconds. (Satellite Emergency Trouble Alarm System).

116. SPECIAL ANTENNAS FOR VHF GROUND CONTROL.

a. Presently, there are only four 100 kHz and three 50 kHz VHF ground control frequencies assignable for any geographic area. In congested metropolitan areas, past experience has shown one remedy for interference between nearby ATCTs on the same channel has been a special antenna. The antenna is a commercially produced, directional unit which provides a front to back ratio of 6DB. These, or similar antennas, shall continue to be used as needed at all airports in metropolitan areas.

b. Special attention to ground control antenna height is required in congested areas. The antenna should be placed on the runway side of the control tower, at a height of 10' to 15' above the ground. Transmitter power output should be decreased to the least amount that will give reliable coverage on airport. Any or all of the mentioned fixes should clear most ground control interference problems.

117. RESERVED.

118. A/G RECEIVER INTERFERENCE. VHF communication receivers, whose second IF is 1.85 MHz, are subject to beat interference when tuned to 120.3 MHz. The first conversion crystal frequency in 6.375 MHz, and the second coversion crystal frequency is 9.225 MHz, resulting in 1.85 MHz difference which appears as a beat in the second IF chain. One solution has been to shift the second conversion crystal a small amount, retuning the IF line to the modified frequency. In above example, the crystal was changed to 8.275 MHz, putting the beat frequency to 1.90 MHz.

119. "TYPE APPROVED" EQUIPMENT FOR NON-FEDERAL USERS. Non-federal potential users (including state and municipal governments) require FCC licenses for their equipment after FAA has engineered a frequency. However, FCC licenses only "Type Approved" (TA) equipment. Contact AWP-406 for details, if needed.

120. VHF and UHF CAVITIES AND RECEIVER CRYSTAL FILTERS. Where two or more VHF or UHF T/R frequencies are installed in near proximity, intermod or brute force interference may result. Improved selectivity by front end filtering with cavity or crystal filters will normally solve the problem. For interfering frequencies 1 MHz or more in VHF or 2 MHz or more in UHF, tunable cavity filters are useful. The VHF is FSN 5915-00-309-0514. The UHF is FSN 5915-00-163-5960. Crystal filters for VHF for 100 kHz or more are very effective. Contact AWP-406 for further details, and AWP-463 for a waiver.

121. POSSIBLE COURSE EXCURSIONS ON ILS LOCALIZERS EQUIPPED WITH REGULATED OUTPUT AMPLIFIERS.

a. Course excursions have been noted on ILS Localizers because of R.F. leakage into the regulated output amplifier. This resulted in additional 90 and 150 CPS modulation of the carrier.

b. Using an RFI meter with a current probe, areas of high RF leakage were located in the type TUR transmitters. The area of greatest leakage was found to be between the top cover of the power amplifier shield compartment and the front panel. This cover is not secured to the panel along the entire front edge.

c. Radiation leakage was minimized by placing V-crimped brass stock between top cover and panel, forming a very tight friction fit. Additionally, .01 UF capacitors were placed between top cover and ground in the regulated output amplifier. These steps completely eliminated audio rectification in the regulated output amplifier.

d. The trouble can be very easily detected by removing the voice input to the regulated output amplifier and noting any up-scale reading on its level meter. Any readings above zero indicate RF rectification in the audio amplifier.

122. RECEIVER LOCAL OSCILLATOR INTERFERENCE. The inexpensive VHF aviation receivers used by the general public often utilize 10.7 MHz as an IF frequency. When tuned to a frequency, the necessary superhetrodyne conversion requires that the local oscillator frequency be plus or minus 10.7 MHz of the frequency tuned. If this ± 10.7 MHz of the tuned frequency happens to fall on another aviation frequency utilized in the area, it can be a serious source of interference.

123. INTERFERENCE FROM FUEL HEATER SPARK TYPE IGNITION SYSTEMS. Heating units with spark type ignition systems have been a source of interference which has been detrimental to radio communications. As a result, in the vicinity of airports, they are supplying alternate type ignition systems until this deficiency can be corrected.

124. AUDIO AMPLIFIERS. The CA-1500, 1700 and 5200 series tube type regulated output amplifiers may not have any AC line filtering. As a result, they are subject to audio rectification from transmitters that are transmitting in the same building. This condition has been observed at both RCAG and ILS facilities. The solution is very simple. Add two .01 MFD ceramic capacitors; one from each AC line-to-ground at the line input, inside the regulated output amplifier.

125. ELT HANDLING PROCEDURES. See Emergency Locator Transmissions, Order 6050.29A dated 6/21/76 and WP SUP 2 dated 10/12/76.

126. OFF FREQUENCY OPERATION IN FA-5791 MARKER EQUIPMENT. We have found that the output carrier frequency from FA-5791 solid state marker transmitters may go far out of tolerance if oscillator trimmer capacitor C-409 is adjusted. Initial checks on ten units found three out of tolerance. It is possible to pull the carrier frequency as much as 35 kHz off-channel and, in one extreme case, the carrier could be moved 100 kHz off-channel.

127. TURNKEY TOWER COMMUNICATION INTERFERENCE. We have had a few incidents of receiver interference that was caused by the wind direction and speed generator, located on top of the Tower cab. The noise in the receiver exactly followed the changes in wind speed.

128. OFF-FREQUENCY CRYSTALS for tune-up of FAA A/G transmitters have been in use at many facilities for some time. Off-channel crystals and a dummy load may be utilized when tuning up the standby equipment. The only frequencies authorized for this use are 112.5 kHz above or below authorized frequency. This applies to both VHF and UHF A/G frequencies.

129. TV INTERFERENCE

a. Channel 5. The 75 MHz markers used in ILS are frequently located in or very near residential homes. When this is so, interference to TV reception of Channel 5 and sometimes Channel 4 occurs. This is due to frequency adjacency. Channel 4 is 66-72, Channel 5 is 76-82 MHz. AWP-406 has developed some very effective filters to place on the viewer's set. If this type of interference is reported to you, contact AWP-406 for assistance. Do not touch the viewer's TV set.

b. Channel 7. The proximity of Channel 7 (174-180 MHz) to the 172.9xx MHz 110 watt repeaters of the Regional FM Network, occassionally will cause a mistuned TV set AFC circuitry to capture on our repeater. If this type of interference is reported, advise the complainant to adjust the fine tuning of Channel 7 "by the user's manual". Thus far, that has always eliminated the problem. The relative strength of our repeater is sufficient to "pull" the AFC circuit away from the TV audio frequency (179.75 MHz), yet the TV set operates normally under no-repeater signal conditions. In difficult PR cases, the SFC may have to visit the complainant and do the fine tuning in his presence. If unsuccessful, do nothing else, and call AWP-406.

130 - 140 RESERVED

CHAPTER 9. CHARTS AND TABLES

SECTION 1. GENERAL

141. PURPOSE. This chapter contains information in the form of charts and tables for reference purposes.

142. FAA/ICAO FREQUENCY PAIRING FOR ILS. The pairs of radio frequencies used in FAA Instrument Landing Systems shall be selected sequentially as required from the frequency lists contained in 6050.5B.

143. FAA FREQUENCIES AND THEIR PRIMARY USE.

kHz	200	-	285	LF Navaids
	285	-	325	LF Navaids (Shared w/Maritime Service)
MHz	75.0			ILS Markers and Fan Markers
	108.1	-	112.0	Even Tenths - VOR; Odd Tenths - LOC
	112.1	-	117.9	VOR
	118.0	-	121.4	FAA A/G & G/A Communications
	121.5			Emergency
	121.6	-	121.9	Airport Ground Control
	122.0			Enroute Weather Information
	122.05	-	122.75	FSS Communications
	122.8	-	122.85	Aeronautical Advisory Stations
	122.9			Multicom Communications
	122.95	-	123.05	Aeronautical Advisory Stations
	123.1			International SAR Frequency
	123.15	-	123.55	Flight, Test, Flying Schools
	123.6	-	128.80	FAA A/G & G/A Communications
	123.85	-	132.0	Non-Govt Operations; Aeronautical Services (ARINC)
	132.05	-	136.0	FAA A/G & G/A Communications
	162.0	-	174.0	GOV VHF Networks
	225.0	-	328.6	Military A/G & G/A Communications
	328.6	-	335.4	ILS - Glide Path
	325.4	-	400.0	Military A/G & G/A Communications
	406.0	-	420.0	G/G VHF Links
	960	-	1215	TACAN, DME (ATCRBS, Transmit 1030/Receive 1090)
	1215	-	1400	ARSR L Band RADAR
	2700	-	2900	ASR S Band RADAR
	5000	-	5250	Radio Navigation (Shared w/Non-Govt) (Future MLS)
	7125	-	7250	G/G Microwave Links
	7300	-	7975	G/G Microwave Links
	8025	-	8400	G/G Microwave Links
	9000	-	9200	PAR X Band RADAR (Shared w/Non-Govt)
	15400	-	15700	Radio Navigation (Shared w/Non-Govt)
	24250	-	25250	Radio Navigation ASDE (Shared w/Non-Govt)

144. EMISSION. The emission of a transmitted signal is identified by a characteristic symbol. Their symbol consists of three parts:

a. A group of digits representing the necessary bandwidth in kHz (if preceded by an "M" it is MHz);

b. A letter indicating the type of modulation;

c. A digit indicating the type of transmission.

The emission symbol key is as follows:

Modulation Type

A - Amplitude
F - Frequency (or phase)
P - Pulse

Transmission Types

0 No modulation
1 Telegraphy w/o modulation
2 Telegraphy with modulation
3 Telephony (voice)
4 Facsimile
5 Television (video only)
6 4-frequency diplex telegraphy
7 Multichannel telegraphy
8 (Non assigned)
9 Composite

Supplementary Characteristics

A - Single sideband - reduced carrier
H - Single sideband - full carrier
J - Single sideband - suppressed carrier
B - Two independent sidebands
C - Vestigial sideband
D - Pulse - amplitude sideband
E - Width (or duration) modulated
F - Phase (or duration) modulated
G - Code modulated

Example:	6A3	M5P0
	6 kHz bandwidth	5 MHz bandwdth
	Amplitude modulation	Pulse modulation
	Voice telephony (RCAG transmitter)	Unmodulated (ARSR)

.-160. RESERVED.

CHAPTER 10. SECTOR FREQUENCY COORDINATOR (SFC) PROGRAM

SECTION 1. APPOINTMENT OF SFC

161. GENERAL. Each Airway Facilities Sector Manager shall designate one of his technically oriented personnel and one alternate to act in the capacity of SFC. This designee should preferably be assigned to the sector headquarters to assure his overall knowledge of sector operations. The Frequency Management Office (AWP-406) should be kept informed of any changes in personnel assigned to these duties.

SECTION 2. SFC DUTIES, RESPONSIBILITIES, AND AUTHORITY

162. PRIMARY DUTIES AND RESPONSIBILITIES FOR THE SFC.

a. Interference Procedures. The SFC acts as the focal point for the interference problems on the AFS. He shall keep AWP-406 and sector management fully informed of progress on resolving interference problems. AWP-406 shall be immediately notified of all interference problems lasting over 24 hours. In cases which have unusual significance, the SFC shall notify AWP-406 immediately. He is authorized to contact any outside entity (government or non-government) except the FCC, to aid in the resolution of interference problems. Contact with FCC will be made only by AWP-406. The only exception is in an emergency situation when AWP-406 personnel are not available through the FAA Duty Officer. In that case, FCC can be contacted through the FAA Duty Officer.

b. Frequency Requests. The SFC is responsible for submission of frequency requests (WP Form 6050-2) to AWP-406 for frequency action within the AF sector.

c. Interference Forms. The SFC must assure that one interference form (FAA 6050-3) is submitted for each occurence of interference within the AF sector. He should sign each form as the responsible local AF official.

* d. Transmitter Authorization. The SFC is responsible for the proper distribution and posting of Facility Transmitter Authorization Documents and returning suspended documents. He shall notify AWP-406 of any errors in these documents or any changes at the AF sector which would necessitate issuance of new documents.

e. SAIL Van Requests. All requests for the SAIL Van operated by AWP-406 to render assistance to the AFS should be made by the SFC by memo to AWP-406 through the AF sector manager. In an emergency, such as a facility off the air due to interference, a phone call to AWP-406 will suffice.

f. AF Sector Communications. The SFC is responsible for assuring that all mobile and fixed transmitters used for sector communications have a call sign (FAA Form 6050-2) attached. Call sign number blocks have been assigned to each AF sector by AWP-406 and it is the responsibility of each SFC to assign each transmitter a call sign from the number block applicable to his sector. These call sign number blocks can be found in Chapter 3, Paragraph 38 of this order. The SFC is also responsible for the annual submission of WP Form 6050-8, Assignment of Call Letters - Portable Transceivers. *