PROJECT 25
GUIDELINES TO ASSIGN WIDE AREA COMMUNICATION NETWORK AND SYSTEM IDENTITIES

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1.   Scope

The Project 25 family of standards and bulletins is published by the TIA in a series of documents beginning with TSB-102-A, reference [1]. Together these documents define and describe Project 25 system and equipment requirements necessary for system interoperability and compatibility. Project 25 systems generally provide digital land mobile radio services for private radio communications systems and more specifically such services for local, state and national public safety organizations and agencies. These standards and bulletins provide for communications between and within various Project 25 systems and system elements.

Interoperability and compatibility with different Project 25 systems is facilitated with a uniform addressing method as used in the Project 25 standard. Individual subscriber radios are addressed with a combined Wide Area Communications Network Identifier, a System Identifier, and a Unit Identifier. This combined identifier is called a Subscriber Unit Identity, or SUID, as given in reference [2] appendix A. The Wide Area Communications Network Identifier (WACN ID), and the System Identifier (System ID) are shared in common with all the subscribers in a home system. The guidelines in this document explain how to assign the WACN ID and System ID in a uniform manner so that interoperability across diverse Project 25 systems is possible.

2.   Introduction

This document explains a default method to select values for a WACN ID and a System ID for Project 25 systems that uses the trunking procedures given in reference [2]. While this document explains default values, nothing in this document shall be construed as a restriction to limit the usage of other values for the WACN and System ID in actual system instances. The default method explained by this document is a guideline to configure Project 25 systems.

Every system obtains a Call Sign that follows recommendations of the ITU, reference [3]. In the United States the FCC assignments of Call Signs follows the rules given in reference [4]. These Call Signs should consist of at least 3 characters, and as many as 7 characters for Project 25 systems. The first 3 characters should follow ITU recommended assignments for countries, reproduced in Annex A. The characters can be any of 26 letters of the Roman alphabet (A-Z) or 10 numerals (0-9). The system Call Sign may be encoded into the WACN and System ID to uniquely identify each Project 25 system in the world. This constitutes a default international identification plan for Project 25 systems.

Transmissions in a Project 25 system include a Network Access Code (NAC) embedded in each message. The purpose of the NAC is to indicate the identity of the system responsible for a transmission so that interference in nearby systems can be ignored. The NAC is nominally equal to the System ID. Because the NAC has a slightly different purpose from the System ID, it is possible that the NAC should differ from the System ID in some applications. This document explains how to vary the NAC codes so as to maintain some connection to the System ID, which is connected in turn to the Call Sign.

Some systems may be built and installed prior to the assignment of a call sign by a regulator. In such instances it is useful for a WACN and System ID to be defined without knowing a call sign. System manufacturers and planners in particular may need to resort to such a definition. This document explains how to define a WACN and System ID without a call sign that is compatible with the rules for call signs.

3.   Design Considerations

The design considerations that form the basis for the default international identification plan for Project 25 systems are as follows:

3.1 Communication services for Project 25 systems may be provided internationally.

3.2 There could be a number of Project 25 systems in a country.

3.3 The default international identification plan for Project 25 systems shall permit the identification of the country as well as the system in which subscriber units are registered.

3.4 The identification plan should, if necessary, enable the subscriber identity to be used for:
   a) determination of the Project 25 system in which a roaming subscriber unit is registered;
   b) identification of the subscriber unit when information about a specific subscriber unit is to be exchanged between Project 25 systems;
   c) identification of the subscriber unit on the radio control path for registering a subscriber unit while visiting a Project 25 system; and
   d) subscriber unit identification for all signaling on the radio control path.

3.5 There should be provision to adjust signaling on all radio channels to reject co-channel interference from neighboring Project 25 systems or subscriber units in neighboring systems.

4.   Default Project 25 Identification Plan Principles

4.1   Structure of the Subscriber Unit Identity

According to the definitions given in reference [2], the subscriber unit identity is structured as shown in Figure 1.

Subscriber Unit Identity (SUID) 56 bits		
WACN ID 20 bits	System ID 12 bits	Unit ID 24 bits
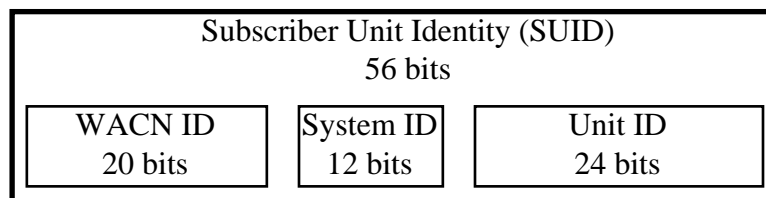
Figure 1 Subscriber Unit Identity

4.2   Call Sign Structure

The Call Sign for a Project 25 system should consist of a string of alphanumeric characters according to the guidelines given in references [3] and [4]. The characters are limited to the Roman alphabet (A-Z), and numerals (0-9). This character set is supplemented with 4 additional characters, a space, "$" (dollar sign), "." (decimal point), and "?" (question mark) for a total of 40 possible characters. Call Signs for Project 25 systems that are less than 6

characters long should be suffixed with enough spaces at the end to produce a 6 character string.

International convention disallows the use of some characters as the leading character of a call sign. In particular the letter Q and the numerals 0 and 1 are disallowed as the first character. This document defines the numeral 0 for the first character to be encoded when the WACN and System ID are defined without a call sign. The 2 characters following the 0 encode the System Numbering Entity (SNE) and a SNE Sequence Digit. The SNE values follow the convention for Manufacturer ID codes given in reference [5]. The SNE Sequence Digit together with the 3 subsequent digits are then available for assignment by the System Numbering Entity. This document explains the encoding for the System Numbering Entity in sections 4.7 and 4.8.

4.3 RAD50 Code

This document explains a conversion of the Call Sign to a number using RAD50 encoding. RAD50 converts each character to a number in the range 0..39 as given in Table 1. Groups of 3 characters "xyz" are then converted to a number (N) in the range 0..63999 by the following calculation. Let $V(x)$ represent the RAD50 value of character "x".

$$N = 1600 * V(x) + 40 * V(y) + V(z)$$

Example: for the string "KS2", $N = 18392$ (decimal) = 0x47D8 (hexadecimal).

Table 1 RAD50 Conversion

Value	Character	Note	Value	Character	Note
0		space	20	T	
1	A		21	U	
2	B		22	V	
3	C		23	W	
4	D		24	X	
5	E		25	Y	
6	F		26	Z	
7	G		27	$	dollar sign
8	H		28	.	decimal
9	I		29	?	unused
10	J		30	0	
11	K		31	1	
12	L		32	2	
13	M		33	3	
14	N		34	4	
15	O		35	5	
16	P		36	6	
17	Q		37	7	
18	R		38	8	
19	S		39	9	

4.4 Call Sign Conversion to WACN and System ID

This clause explains the steps to convert a Call Sign to a WACN and System ID.

4.4.1   Selection of 6 characters

If the Call Sign is more than 6 characters long, the first, or left most, 6 characters are selected. If the Call Sign is less than 6 characters long, sufficient spaces are suffixed to the end of the Call Sign to yield 6 characters.

4.4.2   RAD50 Conversion

The 6 characters of the Call Sign are then separated into a first triplet and a second triplet of characters. The first triplet is the left most 3 characters. The second triplet is the next 3 characters. Each triplet is converted with RAD50 encoding into a number in the range 0..63999 as explained in clause 4.3. The number for the first triplet is denoted `N1`. The number for the second triplet is denoted `N2`.

4.4.3   Partitioning WACN and System ID parts

The WACN is derived from the first triplet value, `N1`, and the most significant 4 bits of the second triplet value `N2`. The calculation for this is given as follows.

```
WACN = 16 * N1 + INT ( N2 / 4096 )
```

This is conveniently computed in software by shifting `N1` left by 4 bits, shifting `N2` right by 12 bits, masking the lower 4 bits of the result, and adding the two numbers together.

```
WACN = (N1 << 4) + ((N2 >> 12) & 0xF)
```

Note that the WACN is a 20 bit number, so it is conveniently stored in a 32 bit integer. The System ID is simply the lower 12 bits of `N2`. A mathematical calculation is given as follows.

```
SystemID = MOD ( N2, 4096 )
```

A software statement to compute the same thing is given as follows.

```
SystemID = N2 & 0xFFF
```

4.5   WACN and System ID Conversion to Call Sign

This clause explains the steps to convert a WACN and System ID to a Call Sign of six characters.

4.5.1   Calculation of N1 and N2

The first and second triplet values are determined from the WACN and System ID by shifting the lower four bits of the WACN into the top 4 bits of `N2`. The remaining 16 bits of the WACN are then `N1` and the lower 12 bits of `N2` are from the System ID. The mathematical calculation is as follows.

```
N1 = INT ( WACN / 16 )
N2 = 4096 * MOD ( WACN, 16 ) + SystemID
```

Software statements to compute the same thing are as follows.

```
N1 = (WACN >> 4) & 0xFFFF
N2 = ((WACN & 0xF) << 12) + SystemID
```

4.5.2   Calculation of Triplet Characters

Each character in the first and second triplet is computed by calculating the residues of N to base 40, and then looking up a corresponding character given in Table 1. The most significant residue is simply `INT(N/1600)`. The second residue is `MOD(INT(N/40),40)`. The least significant residue is `MOD(N,40)`.

4.6   Example Call Sign, WACN ID, and System ID

An example calculation is presented here for the following experimental Call Sign.

```
Call Sign = KS2XBL
N1        =  18392 (decimal) =  0x47D8 (hexadecimal)
N2        =  38492 (decimal) =  0x965C (hexadecimal)
```

```
WACN      = 294281 (decimal) = 0x47D89 (hexadecimal)
SystemID =   1628 (decimal) =   0x65C (hexadecimal)
```

4.7   Encoding by System Numbering Entity

A System Numbering Entity (SNE) has a 2-digit hexadecimal value corresponding to a Manufacturer ID given in reference [5]. This can be converted to a decimal number in the range 0..255 by elementary methods. The SNE assigns an SNE Sequence Digit in the range 0..5 together with a triplet of characters for an identity code. The identity code character triplet must conform to the character set encoded by RAD50 (see Table 1). These numbers are encoded into a WACN and System ID as follows.

```
SNE   = Manufacturer ID,
          a decimal number in the range 0..255
SNESD = SNE Sequence Digit, in the range 0..5
SNE Triplet = 3-character identity code, "xyz"
N1 = 1600 * V("0") + 6 * SNE + SNESD
   = 48000 + 6 * SNE + SNESD
N2 = 1600 * V(x) + 40 * V(y) + V(z)
```

WACN and System ID values are determined from N1 and N2 by the same methods given in clause 4.4.

```
WACN = 16 * N1 + INT ( N2 / 4096 )
SystemID = MOD ( N2, 4096 )
```

For example, if Motorola assigned SNESD=0, and the identity triplet "123" to a system, then the WACN and System ID values would be computed as follows.

```
N1        = 1600 * V("0") + 6 * 144 + 0
          =  48864 (decimal) =  0xBEE0 (hexadecimal)
N2        = 1600 * V("1") + 40 * V("2") + V("3")
          =  50913 (decimal) =  0xC6E1 (hexadecimal)
WACN      = 781836 (decimal) = 0xBEE0C (hexadecimal)
SystemID =   1761 (decimal) =   0x6E1 (hexadecimal)
```

4.8   WACN and System ID Conversion for System Numbering Entity

The WACN and System ID values can be converted to the SNE values by slightly varying the process for call signs given in clause 4.5. The values of N1 and N2 are derived from the WACN and System ID values by the process explained in clause 4.5.1. N2 can then be converted to the SNE Triplet by the process given in clause 4.5.2. N1 is converted to SNE values as follows.

```
IF INT(N1/1600) = 30
THEN
     SNE   = MOD(INT(N1/6),256)
     SNESD = MOD(N1,6)
ELSE
     The first triplet is a call sign and the process
     given in clause 4.5.2 will yield the call sign
     characters.
```

5.   Default Project 25 Network Access Code Principles

This clause explains the connection between the System ID and the Network Access Code (NAC). The System ID is derived from the Call Sign as explained in clause 4. In simple

systems, it should be sufficient to set the System ID and the NAC to the same values, since they are both 12 bit numbers. In some systems, co-channel interference may be a problem, and this interference may come from a transmitter that uses an identical NAC, since the NAC does not completely encode the Call Sign. In these systems, the NAC may be adjusted by varying the least significant 4 bits such that the NAC is distinct from each of the interference sources. Larger systems with multiple sites may vary the NAC at each site to mitigate interference.

6.　References

The following documents contain provisions that, through reference in this text, constitute provisions of this document. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. ANSI and TIA maintain registers of currently valid national standards published by them.

[1] TIA/EIA TSB-102-A, *APCO Project 25 System and Standards Definition*, November 1995.
[2] TIA/EIA TSB-102.AABD, *Project 25 Trunking Procedures*, October 1997.
[3] *International Radio Call Sign Allotments by Block*, adopted by ITU World Radio Conference, Geneva, November 1995, www.fcc.gov/ib/srd.
[4] 47CFR Subpart D §2.302, Call Signs.
[5] *MFID Manufacturer's Identification Number Assignment Guide and Procedures*, Version 1.1, January 1999, ftp.tiaonline.org/tr-8/tr815/Public/mfid0119a.pdf.

7.　Abbreviations

For the purposes of this document, the following abbreviations apply.

FCC　　　Federal Communications Commission.
ID　　　　Identifier, as in System ID or Unit ID.
ITU　　　International Telecommunications Union.
NAC　　　Network Access Code, an identifier embedded in voice or data transmissions.
RAD50　　Radix 50 (octal) encodes 40 characters into binary form.
SNE　　　System Numbering Entity
SUID　　　Subscriber Unit ID, a concatenation of the WACN, System, and Unit IDs.
WACN　　Wide Area Communications Network.

Annex A. Call Sign Series from the ITU

This informative annex lists the Calls Signs for each country as adopted by the ITU World Radio Conference in Geneva, November 1995. The Call Signs are listed by grouping. The right column includes the RAD50 decimal value for the first Call Sign in each group.

  & Designates a provisional allocation to be confirmed at next WRC conference.
  + Designates split three-character blocks.
  * Series allocated to an international organization.
  # Unassigned or reserved blocks not included in the ITU radio regulations.
  % Administrations have exclusive use of all call signs in the block including digits 2-9 as the second character.

	Call Signs	Country Name	R50		Call Signs	Country Name	R50
	AAA-ALZ	United States of America	1641		D4A-D4Z	Cape Verde, Rep. of	7761
	AMA-AOZ	Spain	2121		D5A-D5Z	Liberia, Rep. of	7801
	APA-ASZ	Pakistan, Islamic Rep. of	2241		D6A-D6Z	Comoros, Fed. Rep. of	7841
	ATA-AWZ	India, Rep. of	2401		D7A-D9Z	Korea, Rep. of	7881
	AXA-AXZ	Australia	2561				
	AYA-AZZ	Argentine Rep.	2601		EAA-EHZ	Spain	8041
	A2A-A2Z	Botswana, Rep. of	2881		EIA-EJZ	Ireland	8361
	A3A-A3Z	Tonga, Kingd. of	2921		EKA-EKZ	Armenia, Rep. of	8441
	A4A-A4Z	Oman, Sultanate of	2961		ELA-ELZ	Liberia, Rep. of	8481
	A5A-A5Z	Bhutan, Kingd. of	3001		EMA-EOZ	Ukraine	8521
	A6A-A6Z	United Arab Emirates	3041		EPA-EQZ	Iran, Islamic Rep. of	8641
	A7A-A7Z	Qatar, State of	3081		ERA-ERZ	Moldova, Rep. of	8721
	A8A-A8Z	Liberia, Rep. of	3121		ESA-ESZ	Estonia, Rep. of	8761
	A9A-A9Z	Bahrain, State of	3161		ETA-ETZ	Ethiopia	8801
					EUA-EWZ	Belarus, Rep. of	8841
%	BAA-BZZ	China, People's Rep. of	3241		EXA-EXZ	Kyrgyz Federation	8961
					EYA-EYZ	Tajikistan, Rep. of	9001
	CAA-CEZ	Chile	4841		EZA-EZZ	Turkmenistan	9041
	CFA-CKZ	Canada	5041		E2A-E2Z	Thailand	9281
	CLA-CMZ	Cuba	5281		E3A-E3Z	Eritrea	9321
	CNA-CNZ	Morocco, Kingd. of	5361	&	E4A-E9Z	Palestinian Authority	9361
	COA-COZ	Cuba	5401				
	CPA-CPZ	Bolivia, Rep. of	5441	%	FAA-FZZ	France	9641
	CQA-CUZ	Portugal	5481				
	CVA-CXZ	Uruguay, E. Rep. of	5681	%	GAA-GZZ	United Kingdom	11241
	CYA-CZZ	Canada	5801				
	C2A-C2Z	Nauru, Rep. of	6081		HAA-HAZ	Hungary, Rep. of	12841
	C3A-C3Z	Andorra, Principality of	6121		HBA-HBZ	Switzerland, Conf. of	12881
	C4A-C4Z	Cyprus, Rep. of	6161		HCA-HDZ	Ecuador	12921
	C5A-C5Z	Gambia, Rep. of	6201		HEA-HEZ	Switzerland, Conf. of	13001
	C6A-C6Z	Bahamas, Commonw. of	6241		HFA-HFZ	Poland, Rep. of	13041
*	C7A-C7Z	World Meteorol. Org.	6281		HGA-HGZ	Hungary, Rep. of	13081
	C8A-C9Z	Mozambique, Rep. of	6321		HHA-HHZ	Haita, Rep. of	13121
					HIA-HIZ	Dominican Rep.	13161
	DAA-DRZ	Germany, Fed. Rep. of	6441		HJA-HKZ	Colombia, Rep. of	13201
	DSA-DTZ	Korea, Rep. of	7161		HLA-HLZ	Korea, Rep. of	13281
	DUA-DZZ	Philippines, Rep. of	7241		HMA-HMZ	Korea, Dem. Rep. of	13321
	D2A-D3Z	Angola, People's Rep. of	7681		HNA-HNZ	Iraq, Rep. of	13361

	Call Signs	Country Name	R50		Call Signs	Country Name	R50
	HOA-HPZ	Panama, Rep. of	13401		OKA-OLZ	Czech Rep.	24441
	HQA-HRZ	Honduras, Rep. of	13481		OMA-OMZ	Slovak Rep.	24521
	HSA-HSZ	Thailand	13561		ONA-OTZ	Belgium	24561
	HTA-HTZ	Nicaragua	13601		OUA-OZZ	Denmark	24841
	HUA-HUZ	El Salvador, Rep. of	13641		O2A-O9Z	(Not assigned)	25281
	HVA-HVZ	Vatican City State	13681				
	HWA-HYZ	France	13721		PAA-PIZ	Netherlands, Kingd. of	25641
	HZA-HZZ	Saudi Arabia, Kingd. of	13841		PJA-PJZ	Netherlands Antilles	26001
	H2A-H2Z	Cyprus, Rep. of	14081		PKA-POZ	Indonesia, Rep. of	26041
	H3A-H3Z	Panama, Rep. of	14121		PPA-PYZ	Brazil, Federative Rep. of	26241
	H4A-H4Z	Solomon Islands	14161		PZA-PZZ	Suriname, Rep. of	26641
	H6A-H7Z	Nicaragua	14241		P2A-P2Z	Papua New Guinea	26881
	H8A-H9Z	Panama, Rep. of	14321		P3A-P3Z	Cyprus, Rep. of	26921
					P4A-P4Z	Aruba	26961
%	IAA-IZZ	Italy	14441		P5A-P9Z	Korea, Dem. P. Rep. of	27001
	JAA-JSZ	Japan	16041	#	QAA-QZZ	(Reserved for Q signals)	27241
	JTA-JVZ	Mongolia	16801				
	JWA-JXZ	Norway	16921	%	RAA-RZZ	Russian Federation	28841
	JYA-JYZ	Jordan, Hash. Kingd. of	17001				
	JZA-JZZ	Indonesia, Rep. of	17041		SAA-SMZ	Sweden	30441
	J2A-J2Z	Djibouti, Rep. of	17281		SNA-SRZ	Poland, Rep. of	30961
	J3A-J3Z	Grenada	17321	+	SSA-SSM	Egypt, Arab Rep. of	31161
	J4A-J4Z	Greece	17361	+	SSN-SSZ	Sudan, Rep. of	31174
	J5A-J5Z	Guinea-Bissau, Rep. of	17401		STA-STZ	Sudan, Rep. of	31201
	J6A-J6Z	Saint Lucia	17441		SUA-SUZ	Egypt, Arab Rep. of	31241
	J7A-J7Z	Dominica, Commonw. of	17481		SVA-SZZ	Greece	31281
	J8A-J8Z	St. Vincent & Grenadines	17521		S2A-S3Z	Bangladesh, P. Rep. of	31681
#	J9A-J9Z	(Not Allocated)	17561		S5A-S5Z	Slovenia, Rep. of	31801
					S6A-S6Z	Singapore, Rep. of	31841
%	KAA-KZZ	United States of America	17641		S7A-S7Z	Seychelles, Rep. of	31881
					S8A-S8Z	South Africa, Rep. of	31921
	LAA-LNZ	Norway	19241		S9A-S9Z	Sao Tome and Principe	31961
	LOA-LWZ	Argentine Rep.	19801				
	LXA-LXZ	Luxembourg	20161		TAA-TCZ	Turkey	32041
	LYA-LYZ	Lithuania, Rep. of	20201		TDA-TDZ	Guatemala, Rep. of	32161
	LZA-LZZ	Bulgaria, Rep. of	20241		TEA-TEZ	Costa Rica	32201
	L2A-L9Z	Argentine Rep.	20481		TFA-TFZ	Iceland	32241
					TGA-TGZ	Guatemala, Rep. of	32281
%	MAA-MZZ	United Kingdom	20841		THA-THZ	France	32321
					TIA-TIZ	Costa Rica	32361
%	NAA-N9Z	United States of America	22441		TJA-TJZ	Cameroon, Rep. of	32401
					TKA-TKZ	France	32441
	OAA-OCZ	Peru	24041		TLA-TLZ	Central African Rep.	32481
	ODA-ODZ	Lebanon	24161		TMA-TMZ	France	32521
	OEA-OEZ	Austria	24201		TNA-TNZ	Congo, Rep. of	32561
	OFA-OJZ	Finland	24241		TOA-TQZ	France	32601

	Call Signs	Country Name	R50		Call Signs	Country Name	R50
	TRA-TRZ	Gabonese Rep.	32721		XTA-XTZ	Burkina Faso	39201
	TSA-TSZ	Tunisia	32761		XUA-XUZ	Cambodia, Kingd. of	39241
	TTA-TTZ	Chad, Rep. of	32801		XVA-XVZ	Viet Nam, Soc. Rep. of	39281
	TUA-TUZ	Cote d'Ivoire, Rep. of	32841		XWA-XWZ	Lao People's Dem. Rep.	39321
	TVA-TXZ	France	32881		XXA-XXZ	Portugal	39361
	TYA-TYZ	Benin, Rep. of	33001		XYA-XZZ	Myanmar, Union of	39401
	TZA-TZZ	Mali, Rep. of	33041		X2A-X9Z	(Not Allocated)	39681
	T2A-T2Z	Tuvalu	33281				
	T3A-T3Z	Kiribati, Rep. of	33321		YAA-YAZ	Afghanistan, Islamic State of	40041
	T4A-T4Z	Cuba	33361		YBA-YHZ	Indonesia, Rep. of	40081
	T5A-T5Z	Somali Dem. Rep.	33401		YIA-YIZ	Iraq, Rep. of	40361
	T6A-T6Z	Afghanistan, Islamic State of	33441		YJA-YJZ	Vanuatu, Rep. of	40401
	T7A-T7Z	San Marino, Rep. of	33481		YKA-YKZ	Syrian Arab Rep.	40441
	T8A-T8Z	Palau, Rep. of	33521		YLA-YLZ	Latvia, Rep. of	40481
	T9A-T9Z	Bosnia and Herzegovina	33561		YMA-YMZ	Turkey	40521
					YNA-YNZ	Nicaragua	40561
%	UAA-UIZ	Russian Federation	33641		YOA-YRZ	Romania	40601
	UJA-UMZ	Uzbekistan, Rep. of	34001		YSA-YSZ	El Salvador, Rep. of	40761
	UNA-UQZ	Kazakhstan, Rep. of	34161		YTA-YUZ	Yugoslavia, Fed. Rep. of	40801
	URA-UZZ	Ukraine	34321		YVA-YYZ	Venezuela, Rep. of	40881
					YZA-YZZ	Yugoslavia, Fed. Rep. of	41041
	VAA-VGZ	Canada	35241		Y2A-Y9Z	Germany, Fed. Rep. of	41281
	VHA-VNZ	Australia	35521				
	VOA-VOZ	Canada	35801		ZAA-ZAZ	Albania, Rep. of	41641
	VPA-VQZ	United Kingdom	35841		ZBA-ZJZ	United Kingdom	41681
&	VRA-VRZ	China, People's Rep. of	35921		ZKA-ZMZ	New Zealand	42041
	VSA-VSZ	United Kingdom	35961		ZNA-ZOZ	United Kingdom	42161
	VTA-VWZ	India, Rep. of	36001		ZPA-ZPZ	Paraguay, Rep. of	42241
	VXA-VYZ	Canada	36161		ZQA-ZQZ	United Kingdom	42281
	VZA-VZZ	Australia	36241		ZRA-ZUZ	South Africa, Rep. of	42321
	V2A-V2Z	Antigua and Barbuda	36481		ZVA-ZZZ	Brazil, Federative Rep. of	42481
	V3A-V3Z	Belize	36521		Z2A-Z2Z	Zimbabwe, Rep. of	42881
	V4A-V4Z	Saint Kitts and Nevis	36561		Z3A-Z3Z	Macedonia	42921
	V5A-V5Z	Namibia, Rep. of	36601		Z4A-Z9Z	(Not Allocated)	42961
	V6A-V6Z	Micronesia, Fed. States of	36641				
	V7A-V7Z	Marshall Islands, Rep. of	36681		2AA-2ZZ	United Kingdom	51241
	V8A-V8Z	Brunei Darussalam	36721				
#	V9A-V9Z	(Not Allocated)	36761		3AA-3AZ	Monaco, Principality of	52841
					3BA-3BZ	Mauritius, Rep. of	52881
%	WAA-WZZ	United States of America	36841		3CA-3CZ	Equatorial Guinea, Rep. of	52921
				+	3DA-3DM	Swaziland, Kingd. of	52961
	XAA-XIZ	Mexico	38441	+	3DN-3DZ	Fiji, Rep. of	52974
	XJA-XOZ	Canada	38801		3EA-3FZ	Panama, Rep. of	53001
	XPA-XPZ	Denmark	39041		3GA-3GZ	Chile	53081
	XQA-XRZ	Chile	39081		3HA-3UZ	China, People's Rep. of	53121
	XSA-XSZ	China, People's Rep. of	39161		3VA-3VZ	Tunisia	53681

Call Signs	Country Name	R50	Call Signs	Country Name	R50
3WA-3WZ	Viet Nam, Soc. Rep. of	53721	6TA-6UZ	Sudan, Rep. of	58401
3XA-3XZ	Guinea, Rep. of	53761	6VA-6WZ	Senegal, Rep. of	58481
3YA-3YZ	Norway	53801	6XA-6XZ	Madagascar, Dem. Rep. of	58561
3ZA-3ZZ	Poland, Rep. of	53841	6YA-6YZ	Jamaica	58601
			6ZA-6ZZ	Liberia, Rep. of	58641
4AA-4CZ	Mexico	54441			
4DA-4IZ	Philippines, Rep. of	54561	7AA-7IZ	Indonesia, Rep. of	59241
4JA-4KZ	Azerbaijani Rep.	54801	7JA-7NZ	Japan	59601
4LA-4LZ	Georgia, Rep. of	54881	7OA-7OZ	Yemen, Rep. of	59801
4MA-4MZ	Venezuela, Rep. of	54921	7PA-7PZ	Lesotho, Kingd. of	59841
4NA-4OZ	Yugoslavia, Fed. Rep. of	54961	7QA-7QZ	Malawi	59881
4PA-4SZ	Sri Lanka, Dem. Soc. Rep.	55041	7RA-7RZ	Algeria, P. Dem. Rep. of	59921
4TA-4TZ	Peru	55201	7SA-7SZ	Sweden	59961
* 4UA-4UZ	United Nations	55241	7TA-7YZ	Algeria, P. Dem. Rep. of	60001
4VA-4VZ	Haiti, Rep. of	55281	7ZA-7ZZ	Saudi Arabia, Kingd. of	60241
& 4WA-4WZ	East Timor (UN Authority)	55321			
4XA-4XZ	Israel, State of	55361	8AA-8IZ	Indonesia, Rep. of	60841
* 4YA-4YZ	Int'l Civil Aviation Org.	55401	8JA-8NZ	Japan	61201
4ZA-4ZZ	Israel, State of	55441	8OA-8OZ	Botswana, Rep. of	61401
			8PA-8PZ	Barbados	61441
5AA-5AZ	Libya	56041	8QA-8QZ	Maldives, Rep. of	61481
5BA-5BZ	Cyprus, Rep. of	56081	8RA-8RZ	Guyana	61521
5CA-5GZ	Morocco, Kingd. of	56121	8SA-8SZ	Sweden	61561
5HA-5IZ	Tanzania, United Rep. of	56321	8TA-8YZ	India, Rep. of	61601
5JA-5KZ	Colombia, Rep. of	56401	8ZA-8ZZ	Saudi Arabia, Kingd. of	61841
5LA-5MZ	Liberia, Rep. of	56481			
5NA-5OZ	Nigeria, Fed. Rep. of	56561	9AA-9AZ	Crotia, Rep. of	62441
5PA-5QZ	Denmark	56641	9BA-9DZ	Iran, Islamic Rep. of	62481
5RA-5SZ	Madagascar, Dem. Rep. of	56721	9EA-9FZ	Ethiopia	62601
5TA-5TZ	Mauritania, Islamic Rep. of	56801	9GA-9GZ	Ghana	62681
5UA-5UZ	Niger, Rep. of	56841	9HA-9HZ	Malta	62721
5VA-5VZ	Togolese Rep.	56881	9IA-9JZ	Zambia, Rep. of	62761
5WA-5WZ	W. Samoa, Indep. State of	56921	9KA-9KZ	Kuwait, State of	62841
5XA-5XZ	Uganda, Rep. of	56961	9LA-9LZ	Sierra Leone	62881
5YA-5ZZ	Kenya, Rep. of	57001	9MA-9MZ	Malaysia	62921
			9NA-9NZ	Nepal	62961
6AA-6BZ	Egypt, Arab Rep. of	57641	9OA-9TZ	Congo, Dem. Rep. of	63001
6CA-6CZ	Syrian Arab Rep.	57721	9UA-9UZ	Burundi, Rep. of	63241
6DA-6JZ	Mexico	57761	9VA-9VZ	Singapore, Rep. of	63281
6KA-6NZ	Korea, Rep. of	58041	9WA-9WZ	Malaysia	63321
6OA-6OZ	Somali Dem. Rep.	58201	9XA-9XZ	Rwandese Rep.	63361
6PA-6SZ	Pakistan, Islamic Rep. of	58241	9YA-9ZZ	Trinidad and Tobago	63401

Abbreviations

Commonw.	Commonwealth	Kingd.	Kingdom
Conf.	Confederation	Meteorl.	Meteorological
Dem.	Democratic	Org.	Organization
E.	Eastern	P.	People's
Fed.	Federal	Rep.	Republic
Hash.	Hashemite	Soc.	Socialist
Indep.	Independent	W.	Western

Int'l   International