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The Evolution and Rationale of the ICAO Word-Spelling Alphabet

by
Henry M. Moser
Department of Sr

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Technical Report No. 52
Contract No. AF 19(604)-4575

Air Force Cambridge Research Center
Operational Applications Laboratory
Bedford, Mass.

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The Ohio State University
Research Foundation
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ICAO ALPHABET

A	ALFA
B	BRAVO
C	CHARLIE
D	DELTA
E	ECHO
F	FOXTROT
G	GOLF
H	HOTEL
I	INDIA
J	JULIETT
K	KILO
L	LIMA
M	MIKE
N	NOVEMBER
O	OSCAR
P	PAPA
Q	QUEBEC
R	ROMEO
S	SIERRA
T	TANGO
U	UNIFORM
V	VICTOR
W	WHISKEY
X	X-RAY
Y	YANKEE
Z	ZULU

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THE EVOLUTION AND RATIONALE OF THE ICAO
WORD-SPELLING ALPHABET

Henry M. Moser

THE OHIO STATE UNIVERSITY
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Columbus 10, Ohio

Technical Report 52
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Prepared
for

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AIR FORCE CAMBRIDGE RESEARCH CENTER
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
BEDFORD, MASSACHUSETTS

SUMMARY

The development of the word-spelling alphabet is traced, and research methods and findings which led to the recommendation of the ICAO alphabet as an optimum list for international communications are summarized. Questions regarding the desirability and efficiency of the new alphabet are discussed, with the view to presenting what the alphabet intends to accomplish. Some 200 word alphabets of the world are appended.

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FOREWORD

This report, completed under Contract AF 19 (604) 4575, includes a summary of work accomplished under previous contracts originated by Operational Applications Laboratory, AFCRC, ARDC, with Dr. Karl D. Kryter, Dr. Irwin Pollack and Dr. Herbert Rubenstein serving as project monitors during the period covered by this research. During the period of alphabet evaluation, Dr. John J. Dreher served as principal investigator and Dr. Hans Sperber as foreign language consultant for the project.

Individuals and organizations too numerous to list individually have assisted in supplying the examples collected in the Appendix, and to them we express our gratitude. In particular, we acknowledge the assistance of members of The Foreign Service of the United States and of foreign embassies in Washington.

The number of alphabets compiled to date has passed beyond the original expectation of how many might be included in this report. Inasmuch as all promising sources known to us have now been investigated, it is hoped that this publication will prompt those with knowledge of additional alphabets to direct them to our attention.

THE EVOLUTION AND RATIONALE OF THE ICAO WORD-SPELLING ALPHABET

I INTRODUCTION.

The compilation of word-spelling alphabets was begun during World War II with the idea of tracing the evolution of the systems used by civil organizations and in the military services in the United States, and possibly discovering the original word alphabet. The collection was extended during the period of study and research on an international alphabet to include those of other countries. These alphabets proved of value to indicate working principles, and to provide a large vocabulary of likely words from which possible alternatives might be drawn. Since then additional alphabets have been discovered and a total of 203 different lists are reproduced in the Appendix.

An intensive search has been made of the published literature, old records and files, and interviews have been held with persons having some knowledge of other work in this field. Inquiries have been made of foreign embassies in Washington, as well as of members of the foreign diplomatic services of the United States. It is surprising, considering the number of alphabets reported and the research that must have been involved in their preparation, that so little is known. No mention of this communication device has been found in any of the numerous histories that have been written on radio, telephone, and other communication operations. It seems strange, too, that no consideration of this basic communication tool is contained in any textbook on speech.

A. Word-Spelling Alphabet Defined

A word-spelling alphabet is a conventional code of highly intelligible and non-confusable words for use in identifying letters of the alphabet. The fundamental idea is to employ letter-word association such as M-MIKE, or V-VICTOR. It is a common experience in oral spelling and in the ever-increasing use of letters for identifying products and organizations that letters alone may sound very much alike, and that certain groups, particularly A, H, J, and K; B, C, D, E, G, P, T, V, and Z; F, S, and X; I, R, and Y; L, M, and N; Q, U, and W are easily confused. The problem becomes especially acute in noise, or when communicators are not in face-to-face contact, or when the speaker and the listener come from different regional or language backgrounds. Today certain civil and commercial organizations have official lists of code words, and many countries have several of these codes in use. These are variously designated as analogy, signal, identifying, or guard words; word lists; phonetic codes, alphabets, or equivalents.

B. Origin of the Word-Spelling Alphabet

Where and how the word-spelling alphabet was originated appears to be unknown. The further back we go the more confused are the records and the scantier they become. Its invention is variously associated with shipping, the telephone, and the telegraph. Claims are made for those who worked with the deaf and the hard-of-hearing. There are those who credit its invention to specific persons, and no doubt some of these men in all honesty claim the distinction. Some maintain it is a natural, spontaneous reaction of anyone experiencing difficulty in communication. It may be apparent to some that there is a certain similarity and possibly an association with the type of children's book that has been with us for many generations to teach children their letters. Henry Eckford in a series of 8 papers under the title Wonders of the Alphabet, published in ST. NICHOLAS MAGAZINE, Volume XIII, in 1886 writes:



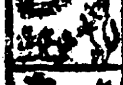



"... nations like the Phoenicians, when adopting a new series of letters, name these letters according to their own fancy, just as we sometimes teach children their alphabets by saying, 'A was an Archer' (or we may prefer to have A stand for an Apple, or some other word beginning with A); and 'B was a Butcher', or 'a Bear', or some other word beginning with B. There is no doubt that both the Romans and the Greeks had lists of words useful to remind children of their letters."

C. History of Word-Spelling Alphabets in the United States

An interesting example of the early use of the word alphabet in the United States appeared as the frontispiece of the American Book Company calendar for 1958. It is taken from the first New England Primer published in 1690 and is reproduced in Plate 1.



The first school—A New England "dame school"

A		In <i>Adam's Fall</i> We Sinned all.
B		Thy Life to Mend This Book Attend.
C		The <i>Cat</i> doth play And after slay.
D		A <i>Dog</i> will bite A <i>Thief</i> at night.
E		An <i>Eagle's</i> flight Is out of fight.
F		The <i>Idle Fool</i> Is whipt at School.

The first textbook—From the *New England Primer*, first published in 1680. Courtesy New York Public Library

Plate 1

Perhaps the most complete account of any phonetic code is that of The Western Union Telegraph Company. The first reference appears in the Journal of the Telegraph, issue of November 1910:

"SPELLING DOUBTFUL WORDS: -

"Words, names and places concerning which there may be doubt, should be carefully spelled, special attention being given to those letters of the alphabet between which there is a similarity of sound. The letters B-C-D-E-F-G-H-M-N-P-S-T-V-X-Y and Z, are the ones which are most likely to be misunderstood, and should be verified in accordance with one of the following methods when occurring as an initial, the first letter of a name, or in any combination where a misunderstanding is likely to occur:

"(1) By following the name of a letter with some frequently used proper name beginning with the letter in question.

"(2) By repeating the name of the letter after the two preceding letters of the alphabet.

"In selecting the method of verification to follow, the clerk should be governed in part by the letter concerned, and in part by her own preference, or the practice laid down by the local operating Telephone Company.

"When one method is used for part of a word, it should be used throughout for the particular word concerned.

"Example of Method 1: -- The word 'Drown' should be spelled 'D' for Dora, R-O-W-N.' The letter 'D' immediately suggests a number of frequently used proper names and the two preceding letters of the alphabet, 'B' and 'C' sound more or less like it, therefore, the first method is followed.

"Example of Method 2: -- The name 'Z. Flood' should be spelled 'Z, X-Y-Z, F, D-E-F, L-double C-D.' The letter 'Z' does not immediately suggest frequently used proper names, and consequently in the case of 'Z' and 'F', the second method is followed."

In 1912, Western Union's practice with respect to issuance of operating instructions was changed, and separate instructions dealing with individual operating methods were established. As one phase of the instruction dealing with the handling of telegrams by telephone, a phonetic code was standardized. (See Appendix, p. 25) The employee who prepared that instruction in 1912 had previously used a phonetic code while working as an employee of the American Telephone and Telegraph Company. The standardized list issued for official use by Western Union employees was the result of combining and revising the optional examples used by telephone and telegraph employees up to that time. The telephone company employees had been using the principle for a number of years prior to 1909 in their long-distance circuit handling operations.

Shortly after the Western Union list was issued as a standard instruction, a change was made in the use of the word example for the letter "I" - IRELAND. This was changed to IDA, due presumably to confusion resulting from the distinctive manner of speech in AHRLAND. The general letter authorizing the change, issued late in 1912, called attention to the possibility of confusion between "I" and "R", and the consequent advisability of the change from IRELAND to IDA.

A subsequent list, issued in 1918, (See Appendix, p. 25) made the following changes:

<u>From</u>	<u>To</u>
J for JERSEY	J for JOHN
N for NEWARK	N for NEW YORK
T for TEXAS	T for THOMAS
V for VIOLET	V for VICTOR
Y for YALE	Y for YOUNG

In January of 1942, "V" for VICTOR was changed to VICTORY. The Western Union list has remained unchanged since that time.

Much information on the early use of methods to identify letters of the alphabet over the telephone appeared to have been lost, and has only recently come to light. A search made in the libraries of the Bell Telephone Laboratories and the American Telephone and Telegraph Company revealed no articles on the subject. An historian who spent several years going through old files and records did not recall seeing any mention of letter telling. One official of A T & T expressed the opinion that the words and pronunciations used in "Operating Practices" represented a natural evolution based on the accumulated experience of 82 years of trying to give the best telephone service possible. He assumed the use of names to identify letters was as old as the first telephone conversation on which there was difficulty in hearing. It would seem to have been an entirely spontaneous reaction, if not sure of a letter to ask, "Was that 'J' as in JOHN?" or "Jack", or "James", or "Jerry", using his own name or that of an acquaintance, or that of the individual in question if it were known. This informant pointed out that all of the A T & T words are familiar first names of people excepting the letters Q, U, X, Y, and Z, for which familiar first names do not readily come to mind.

Ten years ago a veteran executive in the traffic department of A T & T reported that the system then in use had remained unchanged since 1913, and this statement has been quoted in earlier reports¹⁻² from our laboratory. He recalled a number of earlier informal discussions with experienced operators in regard to the selection of words, and the practice of posting instruction charts with the words accompanied by accent marks and symbols to indicate inflection and the degree of emphasis to be placed on each syllable. He could not recall the existence of an earlier list. One executive, apparently in his enthusiasm for the personalized services of telephone operators characterized by the slogan "The Voice with the Smile," stated that the words shown in "Operating Practices" are merely illustrative and are not in any sense restrictive. Another

executive, while stressing the importance of natural expression of the personality, insisted that no deviations from "Operating Practices" would be tolerated.

Through the intervention of an executive of the Ohio Bell Telephone Company, experienced company personnel secured the cooperation of officials in the Operating and Engineering Department of the A T & T. Their access to personal files made it possible to construct a chronological history of the methods used by the telephone company to identify letters of the alphabet.

On December 1, 1904, The American Telephone and Telegraph Company issued a bulletin called "Operating Rules." Among the general rules was the following:

"Passing Names. In passing and repeating the names of all persons and the names of places concerning the spelling of which there may be doubt, these words shall be spelled. In spelling names and in passing initials, a letter concerning which there may be any doubt shall be given at the end of the two next preceding letters of the alphabet. Special attention should be given to the passing of those letters of the alphabet between which there is a similarity of sound when passed by telephone. The letters, B, C, D, F, H, M, N, P, S, T, V, X, Y, and Z are the ones which are most likely to be misunderstood, and should when occurring as an initial or the first letter of the name of the person always be repeated.

B - ab	M - klm	V - tuv
C - abc	N - lmn	X - vwx
D - bcd	P - nop	Y - wxy
F - def	S - qrs	Z - xyz"
H - fgh	T - rst	

In 1908 a modification of the rule was issued to include the use of proper names, but no list was provided. The operator used any name with which she was familiar. An example, "D as in Dora", was furnished. She also used the alphabet method.

Bulletin 10, which superseded "Operating Rules" of 1904, was issued in 1910. The example was changed to "D as in David". No list of names was provided.

In 1914 a modification was issued canceling the alphabet method and recommending only the use of proper names. No list was provided.

Bulletin 10 was reissued in 1917, and a list of proper names was provided for the first time.

In 1922, the "Toll Operating Practice" was issued by the Operating and Engineering Department. It superseded Bulletin 10; but no change was made in either the method or the list of words.

The change of the example "D" from DORA to DAVID suggests the possibility of an earlier unofficial list. One wonders why telephone engineers who pioneered the development of procedures for the investigation of the intelligibility of speech did not apply these techniques toward the development of an alphabet. Possibly the answer is that it may be the wiser course of action to get along with a somewhat inferior system that is thoroughly standardized and established than to risk all of the confusion and antagonism involved with the introduction of a new system. At any rate, the A T & T list is one of the best known and was adopted by the American Association of Railroads as recently as 1957, replacing the Western Union list.

Alphabets used by the military services are not difficult to trace with the frequently published pamphlets, technical and field manuals, and handbooks. However, there is a noticeable lack of consistency in the alphabet presentations from year to year. Military procedures were the concern of the individual services before World War II and then became the responsibility of a Joint Board. The Joint Army and Navy Procedure prepared by the Joint Board November 13, 1940 and effective March 1, 1941 preserved certain alternatives to be used by the Army and Navy in their individual activities. A Combined Communication Board was established following the entrance of the United States into World War II. The first combined procedure (W/T, R/T, Combined Operating Signals, etc.) was worked out during 1942 by the CCB "Methods and Procedures" committee.

Old-time Navy men insist that the alphabet originated in the Navy as a means of identifying flag signals. Two alphabets appear in the same publication, Navy Boat Book, for the year 1908. (See Appendix, p. 22) The introduction of two alphabets suggests the possibility that two different systems might have been in use and both warranted recognition. Apparently the Navy must have learned quickly that confusion results from the use of two alphabets, as shortly afterwards a new alphabet appeared first in a footnote, and subsequently alone. Perhaps an entirely new single alphabet was introduced to avoid antagonizing the proponents of either of the original lists. In the years that followed there were changes, and some differences are noted in the printed representations of the longer words; i.e., AFFIRMATIVE, INTERROGATORY, NEGATIVE, OPTIONAL and PREPARATORY. For example, INTERROGATORY appears in full, again as INTER, and other times as INT. (See Appendix, pp. 22, 23) Some publications state that the shortened

words are to be pronounced in full; in some this instruction may be implied, but later editions clearly state the use of AFIRM (usual spelling), INTER, NEGAT, OPTION, and PREP.

Another source of information on communication and alphabets in particular is The American Radio Relay League. Founded in 1914 to keep pace with the technical progress of amateur radio, the organization has a large membership including outstanding authorities in the field, and a record of distinguished service to the nation. The League publishes The Radio Amateur's Handbook and the monthly QST. F. E. Grundy, who is credited with preparing the first edition of the Handbook, has served as Communication Manager of ARRL both before and after his service in the Directorate of Communications of the U. S. Army Air Forces during World War II.

The earlier Handbooks presented a word list of three- to five-letter words, with no phonetic implications, for the purpose of expanding initials or sending messages containing radio calls. Likewise other lists were presented from time to time for information, including the International Radiotelephone list, the Military list, and that of Western Union. In the seventh edition (January 1930) Handbook, the League's choice among available lists was that of Western Union and it became known as the ARRL List. During the years 1938-1939 the Official Phone Station Operators, a group of the League, made a study of a large number of word lists which led to a reconfirmation of the Western Union list.

Early in 1946 the ARRL List was invalidated by an FCC regulation which announced a complete new text for Part 12 of Rules and Regulations governing the Amateur Radio Service. Phonetic aids to identify might be used, but to prevent confusion these were not to embrace the names of countries, states, or cities. As a service to all amateurs the ARRL List was studied by a committee and revised to eliminate large city names. To insure that no amateur would be cited because of the possibility that at some remote spot on earth a city with one of the alphabet names exists, the FCC was asked to review the list. (See Appendix, p. 26) This was declared to be in compliance with the new regulation. The new list, by eliminating geographical names, actually overcame what had been regarded by some as a fundamental weakness. When the FCC regulations withdrew the 1946 ban on geographical names, the revised alphabet was continued and at the present time enjoys wide amateur acceptance.

D. History of International Alphabets

Since 1927 there has been international agreement on the desirability of a single word-spelling alphabet for use in aeronautical and maritime

radiotelephone communications throughout the world. While the first International Telecommunication Union alphabet, AMSTERDAM, BALTIMORE, CANADA, etc., was selected in 1926, and as amended in 1932* has been available for international use (See Appendix, p. 27), operating experience has indicated that the words were unsuitable because they were unusual in everyday language and because they lacked desirable phonetic qualities.

A new era of alphabet construction was introduced shortly after the entrance of the United States into World War II. Major F. D. Handy, Directorate of Communications, AAF, and member of the working committee of the CCB, submitted lists of alphabetical equivalents to the Psycho-Acoustic Laboratory of Harvard University with the request that it determine the most successful word for each letter for use in communicating over military interphone in the intense noise encountered in modern warfare. Included were the military lists known as USA (See Appendix, p. 31), RAF (p. 21), Royal Navy (p. 21), British Army (p. 21), Proposed London (p. 31), and Suggested US-British (p. 31); the commercial lists employed by American Telephone and Telegraph (p. 24), Bell Telephone of New Jersey (p. 32), RCA Communication (p. 25), and Western Union (p. 25); and the International Telecommunications Convention (p. 27). Also included were additional words under consideration by the CCB. Inasmuch as the laboratory had already conducted extensive experiments, 130 words found to be the most intelligible from a tested population of 2400 words were also considered. In all, 250 different words were tested.

The results showed that many of the words in the military lists had a low level of intelligibility, but that most of the deficiencies could be remedied by the judicious selection of words from the commercial codes and those tested by the laboratory. In a few instances where none of the 250 words could be regarded as especially satisfactory, it was believed possible to discover suitable replacements. Other words were tested and the most intelligible ones were compared with the more desirable lists. A final NDRC list (See Appendix, p. 30) was assembled and recommended to the CCB.

All efforts up to this time to locate the CCB file have been unsuccessful. The communications chiefs of the respective services were of course the responsible parties represented in this group. The NDRC list was utilized in the working-level deliberations of the communication board. However, it was necessary to contend with prejudices and desires of other services. There were very important operational words used by both U. S. and British services. Some considerations

*The 1932 version of the ITU was confirmed at the Atlantic City Conference in 1947.

were given toward making the words international. Late in 1942 directives from the European theater put pressure on the committee to approve a "common language" to facilitate combined efforts in fighting the war. It is reported that after carefully evaluated decisions had been made on most of the alphabet, there still remained several words on which neither the U. S. nor the British side would yield. Therefore, the Generals and the Admirals went down the list taking first a U. S. and then a U. K. preference to complete the list and get on with the war.

There seems little doubt that the services were impressed with the approach and achievements of laboratory research and that only the urgency of time considerations terminated the search for an ideal phonetic word list in favor of the arbitrary adoption of a practical compromise designed to give General Eisenhower an immediate, common military-required language tool with which to fight the war. When in 1944 the British insisted on a replacement for NAN because of confusion with NINE and NINER, the NDRC recommendations were considered and NICKEL was selected.

Near the end of World War II, the realization that large-scale expansion of air transportation would follow the end of hostilities pointed to the need for an international convention to deal with certain aspects of civil aviation as they were related to international air transport operation. The United States assumed the initiative by calling an international conference. Thus, the International Civil Aviation Organization, ICAO, was born in Chicago in 1944, and permanent headquarters were established in Montreal the following year. When ICAO in 1946 agreed on the need for an international alphabet, the Combined Services alphabet (See Appendix, p. 23), ABLE, BAKER, CHARLIE. . . , which had become well known throughout the world because of its extensive use in military operations, was adopted and became the first ICAO alphabet. Later ICAO became affiliated with the United Nations as a specialized international body dealing with aviation affairs. ICAO now has a membership of 73 nations which operate civil air transport or provide aviation facilities.

While this first ICAO alphabet (US-UK) had always seemed satisfactory for speakers of British and American English, complaints were promptly registered by users from other nations. Within the year the Spanish-speaking representatives advised that the ABLE, BAKER, CHARLIE. . . set was unsuited for Spanish users, and a supplementary Spanish alphabet was proposed. (See Appendix, p. 28) This was adopted by ICAO and given equal status for world-wide use in civil aviation.

In the next few years attention was again directed to the advisability of a single universal alphabet, and several attempts were made to produce a list of words which sounded substantially the same in the three working languages of ICAO; namely, English, French, and Spanish. Professor Jean Paul Vinay of the University of Montreal was commissioned by ICAO to develop a phonetic alphabet according to logical linguistic principles to be acceptable to international users. To be considered a word must:

- (1) Be a live word in each of the three working languages.
- (2) Be easily pronounced and recognized by airmen of all languages.
- (3) Have good radio transmission and readability characteristics.
- (4) Have a similar spelling in at least English, French, and Spanish, and the initial letter must be the letter the word identifies.
- (5) Be free from any association with objectionable meanings.

A new ICAO alphabet embodying these criteria was proposed, and during the period of review and comment by ICAO States, two minor changes were proposed. These changes, as well as the basic alphabet, were accepted by the member nations for use as an international standard to be effective 1 April 1952. This new alphabet (See Appendix, p. 27) figure prominently as a balancing factor in gaining world-wide acceptance of the English language as the international medium of aviation communication.

Immediately after its adoption, criticism of the new ICAO word alphabet was registered by pilots and operators accustomed to the ABLE, BAKER, CHARLIE . . . list. To explore some of the objections, and in the interests of an optimum alphabet for joint and combined operations, notably with the NATO nations, the USAF directed Operational Applications Laboratory, AFRCR, ARDC, to monitor a project with the Research Foundation of The Ohio State University. The specific problem was to determine by experimental tests which of the two alphabets is better suited for use by American and foreign personnel operating under varying conditions of communication, and whether suitable changes could be determined and should be made to improve its efficiency. Clearly the expense and inconvenience of changing already established procedures would be justified only if the words utilized by the ICAO alphabet were better adapted than those of the US-UK alphabet to the phonemic habits of international users and would, therefore, prove more effective in combined operations.

II. COMPARISON OF ICAO AND US-UK ALPHABETS

Several reports on comparisons of the ICAO and US-UK alphabets have been submitted by this laboratory through official channels and are summarized below.

A preliminary comparison of the alphabets under one condition of ambient noise with an untrained group of 60 Air Force ROTC senior students at Ohio State as experimental subjects indicated superiority of the ICAO lists. On the basis of this, more specific tests were designed for more completely trained listening panels and test speakers representing six NATO nations. Listening was accomplished under five different signal-to-noise ratio conditions.

The idea of conducting tests under conditions of high noise interference is to provide a quicker, more economical way of determining the relative effectiveness of alphabet words. Experimental evidence indicates that higher noise levels do not create confusion, but do intensify those confusions already inherent between the words in question, thus enabling the experimenter to pick out more easily the actually and potentially ineffective words. The noise levels and S/N ratios used do not deviate markedly from the levels encountered in air operations when reception conditions are poor because of distance from the transmitter, static, or equipment malfunction.

Speakers representing the NATO nationalities spoke a number of lists of random three-letter code groups using the two alphabets to be investigated, and tape recordings were made of these lists. Two sets of lists were prepared, one for training purposes to acquaint the listeners with the words of each alphabet, noise interference, and foreign dialects of the speakers, while another set was made for the actual test condition. After approximately twelve hours of listening practice to ensure complete familiarity with both alphabets, the experimental subjects, foreign and American, listened to the test lists under the prescribed conditions of noise interference. Two types of noise generators were employed to introduce interference in the listening lines, and the speech level was attenuated to achieve progressively more difficult reception conditions. The resultant scores were compared and analyzed for differences.

Both foreign and American listeners showed significantly better results in receiving the ICAO alphabet under reception conditions ranging from fair to very bad (viz., -5 to -16 db S/N ratio). This performance is statistically significant at a confidence level of one-tenth of one per cent throughout the most discriminative S/N ranges (viz., -10 db and -12 db).

In the course of this alphabet investigation one of the military services requested that the experiment be repeated using subjects of lower academic status than university students. Accordingly, two panels of high-school juniors were used as experimental subjects. Results reflected high motivation and perhaps greater acuity of hearing in that somewhat higher scores were obtained for both alphabets, but with the ICAO list again superior.

III. MODIFICATIONS TOWARD IMPROVEMENT OF ICAO ALPHABET

Notwithstanding the better performance of the 1952 ICAO alphabet, the following questions were raised:

- (1) Can the efficiency of this set be improved?
- (2) Can the confusable words in the ICAO set be replaced with less confusable words?

In order to evaluate the effectiveness of each word in the ICAO list, an international linguist selected a number of alternate words which he considered as good or better than those in the original set. He followed the principles established by Vinay and studied the critical comments of operators. He was assisted by panels of foreign students. The original words and the alternatives were tested with international subjects for audibility, familiarity, acceptability, and uniformity of pronunciation. Series of articulation tests were then conducted to determine the best choices, and these in turn were tested individually in the context of the entire alphabet. The final stages of testing involved foreign and American air personnel from U. S. air bases.

There are two basic considerations in the development of a restricted vocabulary such as the phonetic alphabet. In the first place, the articulation score for each individual word must be considered. Due to their phonemic composition, certain words are intrinsically unintelligible and are to be avoided. Of equal importance, however, is the factor of confusability. Phonetic similarity, which is not always immediately apparent, may lead to one word being heard, when another word was actually spoken. For example, the word FOOTBALL was considered at one stage of the investigation as an excellent prospect for an "F" word, particularly when it showed a slightly higher articulation score than FOXTROT. However, FOOTBALL (Figure 3) was heard when other words, especially HOTEL and VICTOR, were spoken. The over-all effectiveness of the alphabet was raised by the continued use of FOXTROT.

Accordingly, to answer the question about improving an alphabet, a detailed item analysis of both articulation and confusion scores must be effected. A convenient method is to resort to a visual display such as that represented in

Figures 1, 2, and 3. The articulation score of the individual word may be read in the extreme right column; it represents the percentage of the times the word is correctly identified when spoken. The column total at the bottom under each letter gives the confusability score and represents the number of times the word is heard when another is spoken. The ideal word would have a maximum articulation value and a minimum confusability score. To isolate trouble spots we need only look for large error scores. In the figures all error cells exceeding an arbitrary value have been circled. The number of circles gives a rough comparison of the two alphabets. The line of attack for improvement is indicated in removing as many of the circles as possible by the judicious substitution of alternate words.

Obviously, the first step was to select for replacement a limited number of words exhibiting high error density. Three words, COCA, METRO, and EXTRA, were first replaced by three others: CHARLIE, MIKE, and X-RAY. The rationale for this selection was twofold: the above-average performance of these words in the US-UK set, and the opinion of the project's foreign-language consultant that they were phonemically adopted to NATO users.

Articulation scores of the listening panels reflected a significant improvement in the efficiency of the modified set. As a further check, additional tapes were prepared, new subjects were trained, and a different noise generator was substituted in the testing program. While the raw percentage scores on both the original and modified sets were of somewhat higher magnitude, the modified ICAO alphabet again showed an increase with high statistical significance. Further research indicated that the higher scores could be attributed to the fact that the subjects worked during the first phase with two alphabets while keeping but one in mind during the latter series of tests.

As the next step in the modification, three more words were changed. FOOTBALL, UNIFORM, and ZEBRA were selected for insertion in the alphabet and a new series of tapes, training, and test sessions were instituted. As previously mentioned, the intelligibility of a word is seriously affected by the company it keeps, and it is therefore necessary to test a substitution in the context of the entire alphabet. Articulation scores for individual words should be used only as indicators of the word's performance in a given context.

A study of the comparative scores on the two modifications and the original ICAO alphabet showed that although the six-word modification is superior to the original alphabet, it falls short in performance when compared with the first three-word modification -- more confusions were introduced than were removed by the second three-word modification, although those confusions cropped out in unexpected parts of the matrix. The problem is not unlike that of

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)	(81)	(82)	(83)	(84)	(85)	(86)	(87)	(88)	(89)	(90)	(91)	(92)	(93)	(94)	(95)	(96)	(97)	(98)	(99)	(100)

Table 1: [Illegible text]

Table 2: [Illegible text]

Table 3: [Illegible text]

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	T.	Omia.	G.T.	Att.%	
ALFA	2	12	23	3	6	3	7	1	1					2	8	5		2	2	4			3			88	10	98	87.5		
BRAVO			1	8	2	1	5	4		2		4				1	6	3	10	1	2			2			52	17	69	91.2	
COCA	5	1	29	8	10		24		1	2	2	2	10	10	25	17	2	5		4	6	1	9	2		175	14	189	76.1		
DELTA	7	3	25		4	3	9	5	1	3		3	2	4	10	2	4	3	10		1	1			5	1	106	16	122	84.9	
ECHO	4	3	18	5		6	2	(32)	9	7	3	3	28	10	10	6	14			6	13	23	8	(51)	1	5	267	27	294	62.8	
FOXTROT		1	2	3	3			5	1			2	2	(57)	7		1	1		4	2	5		8	1		106	10	116	85.3	
GOLF	2	7	19	29	2	8		18	2	1	2	11			13	2		6			1	1			5		123	24	147	81.4	
HOTEL	13	4	(44)	6	22	2	4		1	1	1	4	2	11	1	6		1	6	4	3		8	1		152	11	163	79.4		
INDIA	1		1	7	1	1			17	5	6	1			2	1	2	9	2	24	8	13	9	5	15		130	18	148	81.3	
JULIETT		1	1	4	4		4	24		15	2	1				11	14		(36)	7	15		2	(40)			182	22	204	74.2	
KILO	1	1	1	1	1		3	1	4	12		8			2	2	8	2	10	113	2	5	3		28		109	14	123	84.4	
LIMA	7		3		1			20	2	1		3	2		4	2	1	2	(31)	4	9	2	4	5			105	9	114	85.6	
METEO	2	3	3	3	(86)	2	1	9	7	3		6	(87)	8	4	6	1	6	3	11	13	3	(76)	8	1		352	21	373	52.9	
NECTAR	2		3	12	18	8		5	2	1		(91)		21	5		2	2	3	4	8		(61)	2	2		244	11	255	67.8	
OSCAR	15	1	19	2	9	16	4	18				5	7		10	1		1	5	12	5	1	26	2			259	14	273	65.5	
PAPA	15	8	9	1	3	11		2			2	1	6		3	1	3	4	1	1	2	1		3			77	12	89	88.7	
QUEBEC		3	4	1	1	1	1	6	10	1	13	4	1		5	16		2	14	2	3	2	4	1	9		116	21	137	82.7	
ROMEO	1	27	5	4	2	1	10	17	2	8	3	8	5		7	1	8	12	5	20	1	2	2	12	4		167	16	183	76.9	
SIEERA	1	1	1				2	3		2	3	1	2				2	1		2		1			3	2		27	12	39	95.0
TANGO	4	3	5	1	1	1		12	8	1	2	12	8	3	4	13	4	3	1		21	4	1	2	12	1		136	18	154	80.5
UNION	2	1		3	12			(41)	26	15	(51)		1	1		4	5	1			6	17	3	7	(41)			217	18	235	70.3
VICTOR	2		2	1	25	3	5	6	8		2	2	11	13	9	6	9	2	3		2		(35)	(37)	1	4		206	18	224	71.7
WHISKEY	2		2	2	28	3		1	6	8	1	1	1		1	4	6	2		1	5	28	24	4	7		137	14	151	80.9	
EXTRA	3		4	2	(80)	6	1	4	5	1	1	2	2	27	23	2	1	1	1	3	1	19	3		4	2		200	16	216	72.7
YANKEE		2		4	2	1		2	1	1	1	1	6	6			4	1	5	8	4	15	5	3				73	15	88	88.8
ZULU	1	3			9			20	(43)	29	4	3		1		8	1	3		(46)	5	6	2					185	4	194	75.5
R	75	182	145	30	110	5	17	174	132	88	117	147	178	214	123	119	5	100	59	267	157	142	301	80	176	3991	407	4398	78.6%		

12 NATO Spoken
22 International Listeners

FIGURE 2 - - ICAO (Original)
S/N Ratio = -12 dB

20,592 Responses
192 per word

These words, COCA, METEO, and EXTRA, were changed to CHARLIE, MIKE, and X-RAY. The effect of this 3-word modification was to raise the efficiency of the ICAO set from 78.6 to 83.8 per cent.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	T.	Omis.	G.T.	Art. %
ALFA		2												1	1	29	9										47	47	94.6	
BRAVO		4			1				2		1							1	5								18	4	22	97.9
CHARLIE		7					11									1	1										20	20	97.7	
DELTA		3			2	1	2									3	1				2		1	1	1	1	19	2	21	97.8
ECHO				1	13	1	26				1	6	5	4	1	4		1	4	22	16	42				2	159	10	169	81.6
FOOTBALL				2	2					1							4	1				10		2	1	26	1	29	96.9	
GOLF		1	1	1																							13	8	21	98.5
HOTEL		1		25	34	1							3	3	2	5		6	1	6		6		1	1	99	5	104	88.5	
INDIA								1	6	3	1	1			1					1	1	1				2	23	4	27	97.
JULIETT					1			11	9					1		2	5					1			2	42	10	52	95.1	
KILO									2	7	1	1					2	1	1	1					20	42	4	46	95.	
LIMA		1				1			1	2	2	1						1		6		1	1	3	28	6	35	96.7		
MIKE		1	3	1	2	1		14			4	5	1		2						15	1		4	63	9	72	92.7		
NLCTAR		2		3	1	2	1	1			2	5		5					1	3	26	13	2	5	80	8	88	90.7		
OSCAR		14		1	2	16	1	25						17	2						19		14			113	2	115	86.9	
PAPA		5	7										1		14											29	1	30	96.6	
QUEBEC		2	1		2	1	1	3	2	7	1	4							2	1	1	3		26	65	8	73	92.4		
ROMEO		5	3	1			1	1	1	2	1													1	5	30	8	38	96.5	
SIERRA																		1							1	7	4	11	99.1	
TANGO		1	1	1	2		3	1			1	1								1		2		2	3	29	10	39	96.6	
UNIFORM				1																						1	2	3	8	99.4
VICTOR				1		9	4	1	2			1	2	1								18	23	5	119	5	124	86.2		
WHISKEY			1	1			1					2	1						1			9	1			19	2	21	97.2	
X-RAY		2	1		7	7	2						6	29								1	3			64	6	70	92.6	
YANKEE		1		2					1		1	2			2	1		4		3						20	3	23	97.7	
ZEBRA		1	1	1	7				27	13	12	11					9	19	3	1	1					111	5	116	87.1	
																											129	132	261	94.9%

12 NATO Spoken
24 International Listeners

FIGURE 3 - - ICAO (6-word modification)
S/N Ratio = -12db

22,464 Responses
844 per word

Another complete series of tests confirmed earlier results. The 6-word modification (94.2) while superior to the original ICAO set (91.2) failed to reach the level of the 3-word modification (97.0). Higher scores in this series are attributed to the use of a different noise generator and that listeners worked with only one alphabet.

pushing a dent out of child's celluloid ball -- even a successful push leaves a small dent in another place.

Inspection of the analysis for the second series of tests (Figure 3) offered evidence that the word UNIFORM has outstandingly good transmission characteristics in the ICAO environment and hence should receive further consideration, since the analysis clearly indicated that the correspondingly inferior scores of the second modification were not caused by this word. It has subsequently been incorporated in the recommended ICAO alphabet.

One further change seemed to be called for. The British research group, under that direction of Dr. George Eric Bell, whose results gave striking confirmation to the U. S. research, had noted a confusion between NECTAR and VICTOR, both experimentally and operationally. To resolve this objection both British and American research teams conducted experiments for suitable N and/or V words. A solid preference by American air personnel for retaining VICTOR, which agreed with the choice of the United Kingdom, led to the decision to concentrate on a suitable replacement for NECTAR.

Preliminary intelligibility, confusion, and pronunciation trials involving international speakers and listeners reduced the list of available possibilities to two words as the most likely pair from which to choose: NOVEMBER and NUGGET. Inasmuch as there was agreement on the same ICAO alphabet framework with C, M, U, and X modifications to CHARLIE, MIKE, UNIFORM, and X-RAY, the real issue in question was the selection of an N-word. Arrangements were made that a final decision would be sought by joint tests conducted at The Ohio State University. On the basis of the joint tests it was concluded that the word NOVEMBER is the most suitable replacement for N in the modified ICAO list. Therefore, it was the consensus of both the British and American research teams that, as finally recommended in 1956, the ICAO alphabet should stand as:

ALFA	FOXTROT	KILO	QUEBEC	VICTOR
BRAVO	GOLF	LIMA	ROME	WHISKEY
CHARLIE	HOTEL	MIKE	SIERRA	X-RAY
DELTA	INDIA	NOVEMBER	TANGO	YANKEE
ECHO	JULIETT	OSCAR	UNIFORM	ZULU
		PAPA		

IV. PROBLEMS RELATED TO WORD-SPELLING ALPHABETS

In addition to the task of determining the better of the two alphabets and the substitution of suitable alternate words for the "trouble spots" in the

better one, attention was directed to other considerations related to the alphabets.

One step in the investigation was to examine the extent and stability of attitudes towards the individual words of the old and the new alphabet by testing both American and foreign untrained subjects to determine if any prejudices existed. Before receiving any training, the subjects rated all words in both sets on a 7-point preference scale using any criteria they chose. A rating of 1 meant top acceptance while 7 stood for strong repugnance for the word, with intermediate ratings implying varying degrees of like and dislike of the word in question. These ratings indicated a wide difference between the foreign and American groups, with the former preferring the ICAO words, the latter strongly in favor of the US-UK set. After a six-week period of daily work on each alphabet, they were retested to measure any shift in attitude. Neither group showed a significant preference. The prejudice had vanished after the newness had worn off. Does an unfavorable attitude toward a word operate to handicap that word's performance? Comparison of pre-training rating and the subsequent articulation scores of individual words showed no significant correlation of the two variables, thereby perhaps implying that sufficient use of an alphabet serves to ameliorate a prior unfriendly attitude.

One possibly important factor in the success of a word-spelling alphabet is the degree of confidence users have in it over another alphabet in which they have been trained. To investigate this aspect, initially untrained subjects were thoroughly trained equally and alternately with the ICAO and US-IJK words until scores showed no differences on retest and neither group showed a preference for either alphabet. At this point it was assumed that they might evince more confidence in the use of one than in the other when acting under duress. Accordingly, a series of tests requiring oral production of three-word code groups indicated by tachistoscopic presentation of three random letters was devised and administered

Subjects were instructed that either alphabet or any mixture was acceptable as an answer, and that only speed of production was to be measured. Their responses, made at top speed and recorded by a microphone, indicated consistent and significantly greater use of ICAO words, regardless of the subject's nationality.

One other device which was particularly striking in demonstrating the difference in effectiveness between the two alphabets for international use warrants special mention. This was a 20-minute tape recording to show first-hand the mutilation of alphabet words when spoken by foreign speakers. This recording and the results of the experimental tests of the two alphabets were used as a demonstration that was presented to communication authorities*, pilots and control tower

*Air Coordinating Committee, Joint Communications-Electronics Committee, Air Navigation Commission of ICAO, British Ministry of Civil Aviation, among others.

operators, as well as training officers concerned with military and NATO personnel. Ordinarily the recording was heard following the statistical comparison of the alphabets.

Listeners were given a form to use for participation. In the first part of the tape recording they were told that a native Uruguayan speaker would read a written script with three 3-letter code groups in the US-UK alphabet. He had received no coaching on pronunciation on these, or on the three groups that would follow which would be in the ICAO alphabet. The listeners were to imagine that it was vital for them to receive the exact letters transmitted, and were to write down their best guesses. It is impossible to describe the recording, but the following orthography represents the composite judgment of University students of what was said for the first code group in each alphabet.

US-UK

"Nationality Spanish - Number one, write:

HEEG, OH, HAY-OR-HAY"

ICAO

"Nationality Spanish - Number one, write:

JULIETT, OTEL, GOLF"

For verification the listeners were told that they would hear the above repeated, and were to notice that the letters are identical in the two cases.

While trained listeners, such as those employed in the alphabet study, would have had no trouble recognizing a Spaniard saying JIG, HOW, GEORGE, since the words were spoken without competing noise, no pilot was able to identify all three letters in the US-UK alphabet. On the other hand, no difficulty was experienced by pilots in recognizing the corresponding ICAO words even though H was missing in OTEL. (Tests have also demonstrated that pilots experience no difficulty in identifying JULIETT when pronounced HULIETT by others for whom Spanish is the native tongue.)

The second and third parts of the recorded demonstration consisted, respectively, of groups of French and Spanish nationals giving an uncoached individual interpretation of the pronunciation of the US-UK and ICAO lists in alphabetical order. The listeners were instructed to rate each word as poor, fair, or good on the appropriate space. It was unnecessary to ask which list was

rated superior, and it is probably no exaggeration to say that this recording was received with more enthusiasm than the statistical comparison.

Inasmuch as intelligibility, confusability, and international suitability, have been stressed in the presentation, the discussion that followed provided an opportunity to hear objections, listen to counterarguments, and, above all, to hear what constitutes a desirable alphabet from the viewpoint of the people who are to use it.

V. PROBLEMS OF SECURING ACCEPTANCE

Much of the initial resistance to the adoption of the new alphabet could be attributed to familiarity with the old without knowledge or appreciation of what the new alphabet sought to accomplish. Pilots, like people in general, are resistant to a change in their old way of doing things unless they are convinced of the wisdom of the change. Opinion was voiced against the new replacement on the basis of excess syllables, words which were thought to sound alike, and words which were, for many reasons, real or imagined, just not acceptable.

The most cogent reason for every American pilot, in addition to a fine English-speaking aviation industry, to give unanimous acceptance and enthusiastic support to the new alphabet is the overwhelming advantage of having his native language as the universal medium for international radiotelephony. Annex 10 to the Convention on International Civil Aviation states that, while the primary means of exchanging information in air-ground communication is the language of the ground station, the English language will be available on request where English is not the language of the ground station. As long as the present provisions of Annex 10 remain in force, the English language, used in accordance with the standard phraseologies and other provisions of the Annex, will be available as a universal medium. The universal availability of one alphabet and at least one language common to the pilot and the ground operator is important for safety and efficiency in international air navigation. It is indeed fortunate for English-speaking pilots that English is the most commonly used secondary language among other major language groups. It should be remembered that the International Civil Aviation Organization of 73 States presently recognizes three languages, i.e., English, French, and Spanish, for assembly meetings, conferences, reports, and publications. However, radar and reporting radiotelephony phraseologies appear only in English in all editions of these publications in the three official languages. The purpose of these single-language phraseologies is to reduce the elements of information that may have to be transmitted, in each case, to one single clear expression, and in a manner which is the easiest for those whose mother tongue is not English.

Some U. S. pilots felt the prestige of the Service was threatened by the abandonment of what they considered an Air Force invention even though the history given earlier in this report showed the US-UK alphabet with which they were familiar was at its inception a compromise arrangement accomplished for a specific phase of World War II. To invalidate this argument further, a reproduction of what is believed to be the original "Air Force" alphabet is contained in Plate 2.*

First of all, the time factor was considered of prime importance. Those additional syllables of the recommended ICAO alphabet use up channel time, and they thus might constitute an additional menace with the advent of jet aircraft and the ever-increasing density of air traffic. FOX sounded all right, so why can't FOX identify "F" as well as FOXTROT? The answer is, of course, that FOXTROT is an international word, while FOX becomes ZORRA in Spanish, RENARD in French, etc. Now while the British have reported it takes no longer to say TANGO than it does to say TARE, and although American and foreign subjects trained concurrently in the use of the two alphabets at The Ohio State University showed no difference in the time required to send code groups with either list, it must be admitted that the new alphabet has more syllables. While at first glance it does seem obvious that channel time can best be conserved by choosing words as short as possible, there are other important considerations which must not be overlooked.

Suppose that the name PAUL is to be transmitted with a monosyllabic alphabet which used PIN for P, APT for A, USE for U, and LINE for L. Assuming that the pronunciation of each alphabet word requires one-fourth of a second, the transmission of PAUL would theoretically take just one second.

Suppose, on the other hand, that a polysyllabic alphabet be employed which uses PROPAGANDA for P, ADVENTURE for A, UNIFORM for U, and LIMOUSINE for L, and that the average time for each word is one full second. Would one be justified in saying that the use of monosyllables, in general, decreases transmission time by a factor of 4? While this might be theoretically correct, in practice the result would be entirely different. For one thing, the use of monosyllables would automatically create a tendency, if not a requirement, to lengthen the necessary pause between words. Much more important, however, is the consideration that even a momentary noise could entirely obliterate the short word, in which case the listener would have to ask for a repetition probably causing a net loss of several seconds. Suppose, on the other hand, that a noise

*Note misspelling of OCEC both in the listing and example.

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NOTES FOR COMMUNICATIONS OFFICERS

(PROVISIONAL)

▽

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Office Director of Air Service, May, 1919

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A--Able.	H--Have.	O--Oble.	V--Vice.
B--Boy.	I--Item.	P--Pup.	W--Watch.
C--Cast.	J--Jig.	Q--Quack.	X--X-ray.
D--Dock.	K--King.	R--Rush.	Y--Yoke.
E--Easy.	L--Love.	S--Sail.	Z--Zed.
F--Fox.	M--Mike.	T--Tare.	
G--George.	N--Nan.	U--Unit.	

Example, ANC REX FLO. The message will take the following form: Able Nan Cast. Rush Easy X-Ray. Fox Love Oble.

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GOVERNMENT PRINTING OFFICE

sufficient to drown out all of the word PIN would occur during the pronunciation of the word PROPAGANDA. The loss of one or even two syllables would not make the word unintelligible. GANDA would be sufficient to identify the letter. Therefore, the use of the polysyllable would hold the necessity of repetition to a minimum.

It will be noted that the four poorest words in the US-UK list (Figure 1), QUEEN, KING, GEORGE, JIG, are polysyllables, and that the most intelligible monosyllable, HOW, is among those most confused. It is interesting that NAN, one of the best over-all monosyllables from the standpoint of intelligibility and low confusability with other alphabet words, continues to be used in practice, but because of confusion with NINE and NINER* it has been officially changed to NICKEL, in turn, incidentally, a word discarded in the ICAO investigation. Perhaps the fact that most of the digits (0-9) are monosyllables is one of the strongest reasons for their sparing use in the alphabet; and how frequently are alphabet words used in comparison with numbers? The following frequency count³, the largest ever made, is taken from 121,296 words collected from all recordings during a given hour obtained by more than 100 CAA towers in the United States. This study was made in 1950 when only the ABLE, BAKER, CHARLIE. . . alphabet was in use and when radio transmissions were poorer than today.

Digits	Alphabet** Words	
ONE 4955	ROGER 1045	WILLIAM 13
TWO 4249	ABLE 319	LOVE 12
ZERO 4219	NAN 290	SUGAR 12
THREE 4090	KING 259	ITEM 8
FIVE 3480	VICTOR 222	ZEBRA 8
FOUR 2558	HOW 221	TARE 6
SEVEN 2271	CHARLIE 183	GEORGE 1
NINE 2242	MIKE 158	X-RAY 1
EIGHT 2177	BAKER 126	JIG 0
SIX 2014	EASY 59	OBOE 0
NINER 5	DOG 54	PETER 0
	FOX 37	QUEEN 0
	UNCLE 14	YOKE 0

*The signals "Blue Nira" (Alter course together 90° to starboard) and "Blue Nan" (Alter course together to 200°) are in everyday use in the Royal Navy, and the result of confusion between the two might well be disastrous.

**ROGER is also the procedure word meaning RECEIVED; ABLE, HOW, and MIKE have operational use other than as letter equivalents.

Perhaps the best answer to the question of the desirability of polysyllabic words in the alphabet list lies in the added intelligibility resulting from the extra syllables, and the increased variety, hence decreased confusability, resulting from the use of alphabet words of one, two, and three syllables. In regard to the interaction of the ICAO alphabet with digits, very little exists. Most errors are intra set, i.e., digits with digits and letters with letters.

Another principle regarded as basic in alphabet construction is that the individual words must be readily, easily -- in fact, automatically -- associated with the letter identified. Theoretically, the letter D might be identified by DOG, LADDER, MUD. Inspection of the different alphabets in the appendix reveals almost universal agreement that a word should begin with the identifying letter. Statements to this effect are found in the early Navy lists. "Words may be changed from time to time but the word will always begin with the letter it identifies"; and in the telegraph and telephone practice "by following the name of the letter with some frequently used proper name beginning with the letter in question." The danger inherent in allowing an operator freedom in selecting any common first name of people is the possibility of using one or more that sound alike as BARRY, CHERRY, GARY, HARRY, JERRY, CARRIE, LARRY, MARY, PERRY, etc. Possibly the statement of choice in the telephone recommendation quoted above is contradicted in practice by the replacement of D-DORA (confusable with CORA-LORA) to D-DAVID.

Another feature, considered desirable, is to have the word begin with the "natural sound of the letter", i.e., DEMON. It was pointed out that ABLE, EASY, ITEM, OBOE, all begin with the distinctive sound identified, and one older pilot remarked that the older word UNIT should not have been replaced with UNCLE. This recommendation, favoring the US-UK set, was immediately dropped when they heard foreign pronunciations, such as ABLE pronounced with AH, EASY with A, and ITEM with E. They admitted GOLF was an improvement over GEORGE for G, since GEORGE and JIG began with the same "natural sound."

Another practice, while subject to limited use, is to employ the natural sound of a letter and disregard orthography. Thus M, S, and X might be identified as EMMA, ESTHER, and EXTRA. Dr. Vinoy recommended EXTRA to identify X after an extensive search failed to reveal a satisfactory word beginning with X. However, laboratory tests showed that this otherwise excellent international word was hopelessly confused by orthography (See Figure 2). Exhaustive tests with every available word in the language, including XMAS pronounced EKS-MASS, led to replacement with the non-international X-RAY.

The problem of orthography versus letter sound has always plagued alphabet builders. Certain letters commonly represent several sounds [C=S (Caesar), =K (cat)]; [S=S (Sierra), =SH (sugar)]; and several letters can represent the same sound as A and O (Auto - Otto). Also certain speech sounds such as CH, SH, TH, WH, are spelled with two letters. One difficulty in the original ICAO alphabet was that COCA, KILO, and QUEBEC (Kaybeck) all had the beginning sound of K. English-speaking nationals have traditionally resolved this problem of letter identification by using the CH sound as in CHARLIE for C, the KW sound in QUEEN for Q, and reserving K (King or Kilo) for that letter.

Attention has been directed to the presence of three geographic or place names, INDIA, LIMA, and QUEBEC in the final ICAO set. This is a valid criticism, since the use of these words might be misconstrued as forming part of an operational command. It can only be said that these words were in original 1952 set and have been found to work satisfactorily. In the alphabet investigation INDIGO was found to be as good but no better than INDIA, and no word tested equalled either LIMA or QUEBEC in over-all effectiveness.

Opinion was expressed by a few that the alphabet was no place for words associated with commercialism. This remark was directed specifically to the words COCA and VICTOR. This argument would discourage the use of all tradenames, even those which enjoy international status. However, some of these, such as ESSO, JELLO, KODAK, PEPSI, and VICKS, were given serious consideration in the selection of alternate words. For example, KODAK appeared to be an ideal alternate word for K, if KILO were to be discarded because of confusion with ZERO and a nongeographical substitute were found for Q.

It was also argued that the words of the US-UK list, particularly in combination with others, have the desirable trait of "tripping" off the tongue. This property is exceedingly difficult to evaluate, and the proponents argued that it was something more than mere familiarity with the old system. Possibly the fact that the US-UK list has more different parts of speech which make the words more readily associated into combinations, and that there is less variety in the number of syllables, contribute to this end. It is still open to question if this "tripping" quality contributes to the over-all effectiveness of the alphabet.

Finally, there were comments that could be grouped under the requirement that no word should possess a facetious connotation or be of negative moral value. In this regard there were a few who considered the word WHISKEY objectionable. They have since been supported by at least one strong church denomination. It is probably well that tests of COGNAC, SODA, and VODKA

did not turn out well. On the other hand, at least one word in the US-UK list is distinctly socially unacceptable to one of the major language groups, and it is well known that some of the combinations in the US-UK set were at least facetious. So far as the ICAO alphabet is concerned, the only known facetious combination in the earlier list, PAPA ROMEO NECTAR, has been removed with the subsequent substitution of NOVEMBER.

Several astute observers noticed that the majority of the ICAO set end in vowels, predominantly "ah" and "oh", and this was naturally believed to contribute to confusion. The fact that the final sounds are predominantly vowels is not denied, and has been a matter of concern to the experimenters. In general, it can be said that some written final consonants are not pronounced or are pronounced weakly in French and Spanish. Final consonants tend to shorten and even change vowel quality in some languages. In this respect, the variation introduced in the pronunciation of an individual word could be more detrimental than the theoretical contribution of a final consonant to distinguish the word from others in the set. In so far as practicable, polysyllabic words having a different number of syllables and different accentuation by various language groups were avoided; also, words of Romance language origin that have a different connotation in English, for example, ACTUAL and ACTUEL. Words with Latin roots that are in common use in present-day English and Romance languages were given preference. The final selection of each word was determined by the best combination of sounds for maximum intelligibility and minimum confusability.

The minimum amount of linguistic coloring of the words when spoken by different language groups is one of the desirable features of the ICAO set. Nevertheless, a standard pronunciation for each word to eliminate wide variations is desirable, and a recommendation of approximate pronunciation is presented in Annex 10 (Aeronautical Telecommunications) to the Convention on International Civil Aviation. This is in the form of phonetic orthography in both the International Phonetic Convention and Latin alphabet representation (See Plate 3) and a phonograph record. It is unfortunate that this recommendation was not coordinated through one of the research groups. As it stands there are errors and inconsistencies, and it is based neither on research nor on subjective speaker preference. It is hoped that the ICAO Speech Panel, established subsequent to the issuance of this Annex, will consider this problem of alphabet word pronunciation at its meeting. A few further comments on this subject may be in order.

The final vowel in the words ALFA, DELTA, INDIA, LIMA, and SIERRA is represented as AH (/a/ in International Phonetic Convention) instead of UH (/ə/). This pronunciation is used by all English-speaking nationals in attempting to speak with maximum intelligibility. It results from an approximately

THE RADIOTELEPHONE SPELLING ALPHABET (see 5.3.1.2)

Letter	Word	Approximate pronunciation	
		International Phonetic Convention	Latin alphabet representation
A	Alfa	'alfa	<u>AL FAH</u>
B	Bravo	'bra:vo	<u>BRAH VOH</u>
C	Charlie	'tʃɑ:li or 'ʃɑ:li	<u>CHAR LEE</u> or <u>SHAR LEE</u>
D	Delta	'delta	<u>DELL TAH</u>
E	Echo	'eko	<u>ECK OH</u>
F	Foxtrot	'fɒksrɒt	<u>FOKS TROT</u>
G	Golf	gɒlf	<u>GOLF</u>
H	Hotel	ho:'tel	<u>HOH TELL</u>
I	India	'ɪndi:ə	<u>IN DEE AH</u>
J	Juliett	'dʒu:li'et	<u>JEU LEE ETT</u>
K	Kilo	'ki:lo	<u>KEY LOH</u>
L	Lima	'li:mə	<u>LEE MAH</u>
M	Mike	maɪk	<u>MIKE</u>
N	November	no'vembə	<u>NO VEM BER</u>
O	Oscar	'ɒskə	<u>OSS CAH</u>
P	Papa	po:'pe	<u>PAH PAH</u>
Q	Quebec	ke:'bek	<u>KEH BECK</u>
R	Romeo	'rɒmi:ə	<u>ROW ME OH</u>
S	Sierra	sɪ:'erə	<u>SEE AIRRAH</u>
T	Tango	'tæŋɡo	<u>TANG GO</u>
U	Uniform	'ju:nɪfɔ:m or 'u:nɪfɔ:m	<u>YOU NEE FORM</u> or <u>OO NEE FORM</u>
V	Victor	'vɪktə	<u>VIK TAH</u>
W	Whiskey	'wi:ki	<u>WISS KEY</u>
X	X-ray	'eks'reɪ	<u>ECKS RAY</u>
Y	Yankee	'jæŋki	<u>YANG KEY</u>
Z	Zulu	'zulu:	<u>ZOO LOO</u>

Note. — In the approximate representation using the Latin alphabet, syllables to be emphasized are underlined.

Note. — The pronunciation of the words in the alphabet may vary according to the language habits of the speakers. In order to eliminate wide variations in pronunciation, a recording is included on the back cover of this Annex to illustrate the pronunciation desired.

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equal stress on both syllables. This is a good recommendation, and it might be advisable to underline both syllables. Now if this principle would be applied to PAPA, the difference between the British PUH PAH, /pe'pa/ and American PAH PUH, /'papa/ could be resolved with PAH PAH /'pa'pa/.

Every student of speech is aware that the majority of Americans use an r-colored vowel and that the majority of the British "drop their r's" when r is the final letter of a syllable. It is as unreasonable to expect Americans to drop the r in NOVEMBER, OSCAR, and VICTOR as it would be to expect the British to add the sound. It could be argued that to drop this sound does not strengthen these words, that it does not conform to the linguistic habits of the French and Spanish, and that it adds to the total number of words having the distinctive ending of AH. Inasmuch as international tests showed no differences in intelligibility between VICTAH and VICTOR, a solution is presented in following the same recommendation of standard pronunciation used for CHARLIE and UNIFORM, for which two standard pronunciations are recognized.

The recommended pronunciation KEH BECK for QUEBEC was inferior, both in intelligibility and in subject preference, to KWIH BECK or KAY BECK. The last pronunciation has been more or less followed since the alphabet was introduced, and is the natural one for both French and Spanish nationals. The case for the KW pronunciation to differentiate between Q and K has been presented earlier in this paper as a part of the problem of orthography. This is a particular problem for the ICAO Speech Panel to consider. Otherwise, the Annex 10 recommendations have proved to be quite satisfactory, especially in establishing a consistent pronunciation for ECHO and MIKE.

VI. SUMMARY AND CONCLUSIONS

The history of international communications is long, and has on occasion been interrelated with the imperialistic ambitions of great powers. While the progress already made is indicative of a genuine desire among nations to achieve a common ground, so many failures and setbacks have occurred that Brig. General Sir Osborne Manco⁴ concluded:

"No complete or lasting liberation of telecommunications from political influence can be expected until it is clear that national security is in no way dependent on exclusive communication facilities, and until international communications are regarded not as an instrument of national or imperial policy but as an international public service enjoying internationally all the privileges at present received nationally from the national services."

The solution would appear to lie in an international organization that could devise international standards and recommend practices enabling networks to operate internationally as easily as they operate nationally. We have seen that the International Civil Aviation Organization was founded with these exact principles in mind.

One notable historical instance of successful international communication is worthy of mention. It presents a striking pattern with a strangely prophetic implication that may be cited here as a parallel.

It began in 1804 when Admiral Sir Home Popham devised a system of flag signals for the ships of the East India Company.⁵ The idea was well received, and various systems of signals came into being all over the world. As time went on there was an ever-increasing need for standardization so that ships could communicate with each other. To meet this need, fifty years after the system was first started, the British Board of Trade used 18 flags, all of the consonants except 'X', 'Y', and 'Z', to form 70,000 signals. The signals used for distress and their respective meanings are listed below:

FLAG SIGNAL	MEANING
N-C	"In distress - want assistance."
N-D	"I must abandon the vessel."
N-F	"Do not abandon me."
N-G	"I am unnavigable."
N-H	"I am in danger or shoal water - direct me how to steer."

Only consonants were used to prevent pirates and irresponsible sailors from hoisting socially offensive signals. But the important event was that the system was adopted by all countries and translated into all languages. It lasted 30 years, after which the system underwent several revisions, always on an international basis.

In 1908, approximately 100 years after the invention of the signal flags, the earliest known word-spelling alphabet came into being, curiously enough in the U S Navy as a means of identifying these same alphabet flags. Again the system caught on, and the 203 word-alphabets appended to this report are evidence that this type of code has become established throughout the world.

Unlike the distinctive signal flags or the conventional dits and dahs of telegraph and wireless, which by their very nature could easily be made international, communications by voice have always been plagued by the limitations of

single-language transmission as against the need for multi-language reception.

The parallel continues: today, approximately 50 years after the appearance of the word-spelling alphabet, a solution has been effected. This time an international organization has presented an alphabet specifically developed to fit the multilingual requirements of all nations.

The particular problem at hand is larger and much more difficult than simple agreement on an international standard for aviation. Somehow, this standard must be applied by each nation to its own particular circumstances and conditions. It is only natural for an individual now using one of the numerous earlier systems to resent any change in his old way of doing things, just as it is natural for a non-English-speaking country to resent having to learn to use English as a language. It is always difficult for one group to understand the feelings of another, especially when a majority versus minority decision is at stake.

It must be apparent to many that the ideal solution would be world-wide acceptance of one word-spelling alphabet for every form of voice communication. The fundamental reason is that the number of alternative words would be reduced to an absolute minimum, one for each letter, and the listener need merely decide which of 26 alphabet equivalents has been spoken. Such a standardization would mean that this list would become a working part of everyone's vocabulary, as basic as the A B C's and counting from 0 to 10 in that language. Since there would be world acceptance, it would provide a basis for letter identification in any language. Is there any reason for 203 known word-spelling alphabets comprising 1600 different words when one list of 26 words will accomplish the same purpose? Is it efficient for an organization to use one set of words for domestic communication and another for overseas? Should an efficient American secretary, for example, know several alphabets--one for use on the telephone, another to talk to the telegraph operator, another to call the police, and still another for civil defense? Does anyone really believe that communications are best served by giving an operator the option to use any word that comes to mind at the moment? And in ordinary daily communication or in a formal lecture, how does one know which alphabet to use? Can one be sure that a person talking will consistently use the words of the set which is recognized by the listener? Lack of an affirmative answer to this last question has become a particular menace in aviation communication.

It has been demonstrated time and again in the laboratory, and it makes good sense prima facie, that correct identification of words is affected by the size of the vocabulary and the particular words that make up the vocabulary from which the words are drawn.⁶⁻⁷ The smaller the vocabulary used, the easier it is for the listener to identify correctly the individual words of the speaker. Research studies

have shown that, in general, the successful reception of a word will vary directly with the number of syllables it contains.⁸⁻⁹ However, a few carefully selected single-syllable words having obvious and easily discriminated phonetic differences may be employed to advantage, actually contributing desirable variety. But most important of all is the matter of universal acceptance. If the speaker uses only words from the prearranged list, the listener can participate in the communication act with an assurance and a high degree of reliability that can be acquired only through familiarity of both parties with the same words.

Today an ever-increasing number of aircraft take off from various geographical locations and fly the traffic airways of the entire world, landing and then taking off at many international airports. To do this safely and efficiently, each has its own voice radio which must maintain direct communication with similar equipment on the ground of each nation along its route. An absolute requirement for safety and efficiency is the correct and reliable transfer of information between human operators from multi-language groups. This is accomplished through a system of air-traffic control wherein carefully selected words, and carefully prepared phrases are molded into rigid operational procedures. An integral part of the system is the new ICAO alphabet.

It appears that the parallel to the experience with the alphabet flags is on the way to completion. It seems appropriate to emphasize the magnificent opportunity that lies at hand to achieve universal acceptance. At this time there seems to be a definite tendency on the part of civil and commercial organizations in the United States to minimize the importance of their respective alphabets. At least, these individual codes are not given the prominence in current directories and literature that they were receiving only a few years ago. This change in emphasis can not be justified on the basis of improved equipment alone, since various forms of competing noise are still present as are variations in speech habits including dialect and foreign accent. This apparent gradual de-emphasis may be something of a "face saving" gesture toward an invention of the organization's own creation which somehow did not capture the fancy of the public it was designed to serve. No doubt the multiple competitive systems have served to confuse the public, without providing the advantages that would come from a single alphabet. It is hoped that the American Radio Relay League, the American Association of Railroads, A T & T and its affiliates, Western Union, and the American Police Organization will consent to the abandonment of their respective alphabets in favor of the single recommended ICAO alphabet. For efficient national and international communications it would be expedient to secure universal adoption of this one alphabet which, for all practical purposes, is 100 per cent English, 100 per cent French, and 100 per cent Spanish. Furthermore, it is well adapted to the use of all other foreign nations, and it is difficult to imagine that a more suitable medium for universal adoption can be devised from any other

comparable group of languages so widely used.

Considered in the true light of effective communication, the experience with the new alphabet should go a long way in smoothing over the rough spots in international communication. It is believed and hoped that it also may possibly contribute to improved mutual understanding between nations in their various foreign relations.

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APPENDIX

A. ALPHABETS OF THE WORLD

73 Member States of ICAO as of 31 December 1958

AFGHANISTAN
 ALBANIA
 ARGENTINA
 AUSTRALIA
 AUSTRIA
 BELGIUM
 BULGARIA
 CANADA
 CHINA
 CUBA
 CZECHOSLOVAKIA
 DENMARK
 DOMINICAN REPUBLIC
 ECUADOR
 EL SALVADOR
 ETHIOPIA
 FINLAND
 FEDERAL REPUBLIC
 OF GERMANY

FRANCE
 GREECE
 GUATEMALA
 HAITI
 HONDURAS
 ICELAND
 INDIA
 INDONESIA
 IRAQ
 IRELAND
 ISRAEL
 ITALY
 JAPAN
 JORDAN
 KOREA,
 REPUBLIC OF
 LAOS
 LEBANON
 LIBYA
 LIBERIA
 LUXEMBOURG
 MALAYA
 MOROCCO
 MEXICO

NETHERLANDS
 NEW ZEALAND
 NICARAGUA
 NORWAY
 PAKISTAN
 PARAGUAY
 PERU
 PHILIPPINE
 REPUBLIC
 POLAND
 PORTUGAL
 SPAIN
 SUDAN
 SWEDEN
 SWITZERLAND
 THAILAND
 TUNISIA
 TURKEY
 UNION OF
 SOUTH AFRICA
 UNITED ARAB
 REPUBLIC
 UNITED KINGDOM
 UNITED STATES
 VENEZUELA
 VIETNAM
 URUGUAY

Countries that Signed the Original Document
 in Chicago on 7 December 1944

AFGHANISTAN
 AUSTRALIA
 BOLIVIA
 CANADA
 CHILE
 CHINA
 DOMINICAN REPUBLIC
 ECUADOR
 EGYPT
 FRANCE
 GREECE
 HAITI
 HONDURAS
 ICELAND
 INDIA
 IRAN
 IRAQ
 IRELAND

LEBANON
 LIBERIA
 MEXICO
 NETHERLANDS
 NEW ZEALAND
 NICARAGUA
 PERU
 PHILIPPINES
 POLAND
 PORTUGAL
 SPAIN
 SWEDEN
 SYRIA
 TURKEY
 UNITED KINGDOM
 UNITED STATES
 URUGUAY
 DANISH MINISTER
 TEAL MINISTER

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 1949. Issued by the Department of State of the United States.

A F R I C A

East Posts and Telecom.	King's African Rifles	South US-UK	South Afr. Ser. Dist.	South Afr. Reg. Tel.	South Afr. Tel.	French West Africa ICAO
AFRICA	ABLE	ABLE	ABLE	ARTHUR	ANDRIES	ALFA
BOMBAY	BAKER	BAKER	BAKER	BETTY	BESTIE	BRAVO
CHARLIE	CHARLIE	CHARLIE	CHARLIE	CHARLIE	CHNESTO	CHARLIE
DURBAN	DOC	DOC	DOC	DAVID	DAVID	DELTA
ENGLAND	EDDIE	EASY	ESSEL	EDWARD	EVA	ECHO
FREDERIE	FOX	FOX	PANIE	FREDERICK	PANIE	FOXTROT
GEORGE	GEORGE	GEORGE	GAMAT	GEORGE	GEET	GOLF
HARRY	KOW	KOW	HENDRIK	HARRY	HENDRIK	HOTEL
INDIA	INK	ITEN	ITEN	ISAAC	ISAK	INDIA
JAPAN	JIG	JIG	JAKOB	JANE	JAN	JULIETTE
KENYA	KING	KING	KONING	KATE	KABEL	KILO
LONDON	LOVE	LOVE	LIEFAR	LUCY	LENA	LIMA
MADRASA	MIKE	MIKE	MANDA	MARY	MARIE	MIKE
MADAGAI	HAN	HAN	HELLIE	HELLIE	HELLIE	NOVEMBER
OSWANT	OSOR	OSOR	OSLE	OLIVE	OSM	OSCAR
PETER	PETER	PETER	PETER	PETER	PIETER	PAPA
QUEEN	QUEEN	QUEEN	QUEENIE	QUEEN	QUEENIE	QUEBEC
ROBERT	ROGER	ROGER	ROB	ROBERT	ROOS	ROME
SUGAR	SUGAR	SUGAR	SUTHER	SINCOE	SAHWIE	SIERRA
TANTA	TAX	TANI	TANTE	THOMAS	TOM	TANGO
USUDA	USLE	USCLE	URIE	UNION	UNIE	UNIFORM
VICTORY	VICTOR	VICTOR	VAREN	VICTOR	VENNER	VICTOR
WILLIAM	WILLIAM	WILLIAM	WILLER	WILLIAM	WILLEM	WHISKY
X-RAY	X-RAY	Y-RAY	X-STRAAL	X-RAY	X-STRAAL	XRAY
YELLEN	YORE	YOKE	YSTER	YORK	YSTER	YANKEE
ZAMBIA	ZEMBA	ZEMBA	ZAMBOR	ZEMO	ZOBLOS	ZULOU

AFRICA
(contd)

French
West Afr.
PPT

ANATOLE
BERNARD
CAMILLE
DENISE
EMILE
FRANÇOIS
GASTON
HENRI
ISIDORE-IRMA
JEAN
KLEBER
LOUIS
MARCELINE
NICOLAS
OSCAR
PIERRE
QUEBEC
ROBERT
SUZANNE
THOMAS-THÉRÈSE
URSULE
VICTOR
WILLIAM
XAVIER
YVONNE
ZOE

French
West Afr.
PPT

ANATOLE-
BENJAMIN
CELESTIN
DESIRÉ
EDOUARD
FRANÇOIS
GASTON
HENRI
ISIDORE
JOSEPH
KLEBER
LAZARE
MARIE
NICOLAS
OSCAR
PIERRE
QUEBEC
ROBERT
SABRIEL
THÉODORE
URSULE
VICTOR
WILLIAM
XAVIER
YVONNE
ZOE

ALGERIA

Tel. Other
Cca.

ANATOLE
BERNARD
CELESTIN-CHARLES
DESIRÉ-DEMISE
EUGÈNE
FRANÇOIS
GASTON-GEORGES
HENRI
IRMA-IRÈZ
JOSEPH
KLEBER
LOUIS
MARCEL-MICHEL
NICOLAS-NICOLÉ
OSCAR
PIERRE
QUINTAL
RAOUL-ROGER
SUZANNE
THÉRÈSE-THOMAS
URSULE
VICTOR
WILLIAM
XAVIER
YVONNE
ZOE

ARGENTINA

Internat.
R/T Ser.

ANTONIO
BARCKLO
CARMEN
DOLORES
ESPAÑA
FRANCIA
GLOBO
HAMSTERDAM
ITALIA
JOSE
KILO
LONDRES
MADRID
NACION
ONO
ORIENTE
PARIS
QUERIDO
ROMA
SANTIAGO
TERESA
URSULA
VIÑO
WASHINGTON
XIGENA
YERNO
ZAPATO

W. Teleg.
Co. Limited

ALICIA
BEATRIZ
CAROLINA
DOROTEA
EVA
FRANCISCA
GUILLERMINA
HOMBRE
IRÈS
JULIA
KILO
LUCIA
MARIA
NATALIA
OPHELIA
PETRONA
QUINTANA
ROSA
SARA
TERESA
URSULA
VENEZUELA
WASHINGTON
EQUIS
YOLANDA
ZAPATERIA

All America Cables
and Radio, Inc.

ALICIA
BEATRIZ
CAROLINA
DOROTEA
EVA
FRANCISCA
GUILLERMINA
HOMBRE
IRÈS
JULIA
KILO
LUCIA
MARIA
NATALIA
OPHELIA
PANDORA
QUINTANA
ROSA
SARA
TERESA
URSULA
VIOLA
WASHINGTON
EQUIS
YOLANDA
ZAFATERIA

ARGENTINA AUSTRALIA AUSTRIA BELGIUM
(contd)

Long-Distance Int. Ser.	Posts	Tel.	French Telegr.	Flemish Telegr.
AMSTERDAM	ALBERT	ANTON	ARTHUR	ARTHUR
BARCELONA	BOB	ARGER	BRUNELLES	BRUSSEL
CASABLANCA	CHARLES	BERTA	CAROLINE	CAROLINE
CHICAGO	DAVID	CASAR	DESIRE	DESIRE
COPENHAGEN	EDWARD	CHRISTINE	EMILE	EMIL
DUBLIN	FRED	DORA	FREDERIC	FREDERIK
HAMBURG	GEORGE	EMIL	GUSTAVE	GUSTAAP
HELSINKI	HENRY	FRIEDERICH	HENRI	HENDRIK
LONDON	ISAAC	GUSTAV	ISIDORE	ISIDOR
MADRID	JACK	HEINRICH	JOSEPE	JOZEF
MILAN	KATE	IDA	KILOGRAMS	KILOGRAM
MOSCOW	LILY	JULIUS	LEOPOLD	LEOPOLD
NEW YORK	MARY	KONRAD	MARIE	MARIA
PARIS	HELEN	LUDWIG	NAPOLEON	NAPOLEON
PRAGUE	OCEAN	MARTHA	OSCAR	OSKAR
ROME	PETER	ROBERT	PIANO	PIANO
SANTO DOMINGO	QUEEN	OTTO	QUIEVRAIN	QUIEVRAIN
SANTIAGO	ROBERT	OSTERREICH	ROBERT	ROBERT
SINGAPORE	JAMES	PAULA	SOPIE	SOPIA
SOURabaya	THOMAS	QUELLE	TELEPHONE	TELEFOON
SYDNEY	URICH	RICHARD	URSULE	URSULA
VALPARAISO	VICTOR	SIEGFRIED	VICTOR	VINCOE
WASHINGTON	WILLIAM	THEODOR	WATERLOO	WATERLOO
ZAGREB	X-RAY	ULRICH	XAVIER	XAVIERUS
ZURICH	YOUNG	VERL	YVONNE	YVONNE
	ZERNA	VIKTOR	ZERO	ZERO
		WILHELM		
		CAVER		
		YPSILON		
		ZACHARYAS		

ALPHABETICUM
(contd.)

French Tel. Ser.	Flemish Tel. Ser.	French W. U.	Flemish W. U.	French Com. Cable Co.	Flemish Com. Cable Co.	English Com. Cable Co.
ALBERT	ARTEER	ALBERT	ALBERT	ALBERT	ALBERT	ARTHUR
BRUSSELLES	BRUSSEL	BRUSSELLES	BRUSSEL	BERNARD	BERNARD	BENJAMIN
CAROLINE	CAROLINE	CAROLINE	CAROLINE	CAROLINE	CAROLINE	CHARLIE
DESIRE	DESIRE	DESIRE	DESIRE	DESIRE	DESIRE	DAVID
EMILE	EMILE	EMILE	EMILE	EMILE	EMILE	EDWARD
FREDERIK	FREDERIK	FRANCOIS	FRANS	FRANCOIS	FRANS	FRANK
GUSTAVE	GUSTAAF	GUSTAVE	GUSTAAF	GUSTAVE	GUSTAAF	GEORGE
HENRI	HENRIK	HENRI	HENDRIK	HENRI	HENDRIK	HENRY
ISIDORE	ISIDOR	ISIDORE	ISIDOR	ISIDORE	ISIDOR	ISAAC
JOSEPH	JOZEF	JOSEPH	JOZEF	JOSEPH	JOZEF	JOHN
KILOGRAMME	KILOGRAM	KILOGRAMME	KILOGRAM	KILOGRAMME	KILOGRAM	KING
LEOPOLD	LEOPOLD	LEOPOLD	LEOPOLD	LEOPOLD	LEOPOLD	LOUIS
MARIE	MARIA	MARGUERITE	MARGARETA	MARGUERITE	MARGARETA	MARY
NAPOLEON	NAPOLEON	NAPOLEON	NAPOLEON	NAPOLEON	NAPOLEON	NATHAN
OSCAR	OSKAR	OSCAR	OSKAR	OSCAR	OSKAR	OTTO
PIAFO	PIAFO	PORTUGAL	PORTUGAL	PORTUGAL	PORTUGAL	PETER
QUIEVRAIN	QUIEVRAIN	QUALITE	QUIEVRAIN	QUALITE	QUEBEC	QUEEN
ROBERT	ROBERT	ROBERT	ROBERT	ROBERT	QUEBEC	ROBERT
SUZANNE	SUZANNA	SOCIETE	SUZANNA	SOPHIE	ROBERT	SAMUEL
TELEPHONE	TELEFOON	TELEPHONE	TELEFOON	TELEPHONE	ROBERT	THOMAS
URSULE	URSULA	URSULE	URSULA	URSULE	SOPHIA	UNION
VICTOR	VICTOR	VICTOR	VIKTOR	VICTOR	TELEFOON	VICTOR
WATERLOO	WATERLOO	WATERLOO	WATERLOO	WATERLOO	URSULA	WILLIAM
XAVIER	XAVIERUS	XAVIER	XAVIERUS	XAVIER	VICTOR	X-RAY
YVONNE	YVONNA	YVONNE	YVONNA	Y-1-GREC	WATERLOO	YELLOW
ZERO	ZERO	ZOLA	ZERO	ZOLA	XAVIERUS	ZERO
					YVONNA	
					ZOLA	

BELGIUM
(contd)

BERMUDA

BRAZIL

BURMA

	Cable and Wireless Limited		Navy	Tel.	Tel.	Navy and Air Force
ARMAND	ANDREW	ALFA	AFIR	ANA	ARCTUR	ABLE
BERNARD	BENJAMIN	BETA	BALA	BEATRIZ	BELJAMIN	BAKER
CESAR	CHARLIE	COLA	CRUZ	CARLOS	CHARLIE	CHARLIE
EDLIE	DAVID	DELTA	DEDO	DOMINGOS	DAVID	DOG
ERNEST	EDWARD	ECO	ELMO	ERNESTO	EDWARD	EASY
FRANCIS	FREDERICK	FOX	FACE	FRANCISCO	FRANK	FOX
GUSTAVE	GEORGE	GAMMA	GATO	GERTRUIES	GEORGE	GEORGE
HENRI	HARRY	HOTEL	HOPA	HENRIQUETA	HENRI	HOW
ISIDORE	ISAAC	INDIA	INZE	ISABEL	ISAAC	ITEM
JOSEPH	JACK	JAVA	JOIA	JOPA	JOHN	JIG
KILOGRAMME	KING	KAPPA	KILO	KAGADG	KITTY	KING
LEON	LUCY	LORDE	LUAR	LUIZ	LOUIS	LOVE
MARCEL	MARY	MEGA	MARE	MARIA	MARY	MIKE
NESTOR	NELLIE	NELSON	NEGA	ROEMIA	NIGHT	NAN
OSCAR	OLIVER	OSCAR	ONDA	OSCAR	OTTO	OBCE
PIERRE	PETER	PARIS	PREP	PAULO	PETER	PETTER
QUEENST	QUEENIE	QUEBEC	QUER	QUEIROZ	QUEEN	QUEEN
RAOUL	ROBERT	RADIO	RASA	RAQUEL	ROBERT	ROGER
SIDONIE	SUGAR	SODA	SOLO	SALVADOR	SAMUEL	SUGAR
THEOPHILE	TOMMY	TAXI	TUPI	TEREZA	THOMAS	TARE
URSULE	UNCLE	UNLÃO	URSO	URSULA	UNION	UNCLE
VICTOR	VICTOR	VICTOR	VIGA	VALINO	VICTOR	VICTOR
WAGNY	WILLIAM	WHISKEY	VEVA	DABLIU	WILLIAM	WILLIAM
XAVIER	XMAS	XADREZ	XARA	XAVIER	X-RAY	XRAY
YCIERE	YELLOW	YANGKE	YOLE	GRZGO	YELLOW	YONE
ZELMA	ZEBRA	ZEBRA	ZAGA	ZEBRA	ZERO	ZEBRA

JAMBOLIA

CANADA

Civilian	Army	Can. Intl. Can. Pacif. Teleg. Co. Tel.	Canadian Pacif. Tel.	Tel.	Comp. French	Can. Natl. Teleg.	Can. Pacif. Teleg.
AMATOLE	ALFA	ADAM	ALBANY	ALBANY	AS	ADAMS	ADAM
BENNETT	BRAVO	BOB	BOSTON	BOSTON	BEC	BANK	BANK
CHRISTIAN	COCA	CHARLIE	CHICAGO	CHICAGO	COQ	CHARLIE	CHARLIE
ESSINE	DELTA	DOLLAR	DETROIT	DETROIT	DUR	DOLLAR	DOLLAR
EUGENE	ECHO	EDWARD	ENGLAND	ENGLAND	ETE	EDWARD	EDWARD
EMILE	FOXTROT	FRANK	FRANCE	FRANCE	FER	FRED	FRANK
FRANCOIS	GOLF	GEORGE	GLASGOW	GLASGOW	GAZ	GEORGE	GEORGE
HENRI	HOTEL	HENRY	HAMILTON	HAMILTON	HAIE	HENRY	HENRY
LEMA	INDIA	IDA	ITALY	ITALY	ICI	IDA	IDA
JOSEPH	JULIETTE	JACK	JAPAN	JAPAN	JEU	JOHN	JOHN
KLEBER	KILO	KING	KINGSTON	KINGSTON	KAKI	KING	KING
LOUIS	LEMA	LONDON	LONDON	LONDON	LION	LONDON	LONDON
MARCEL	METRO	MARY	MONTREAL	MONTREAL	MOU	MARY	MARY
NICOLAS	NECTAR	NATIONAL	NEW YORK	NEW YORK	NOIR	NATIONAL	NEW YORK
OSCAR	OSCAR	OLIVE	OTTAWA	OTTAWA	OBUS	OSCAR	OSCAR
PIERRE	PAPA	PETER	PETERBORO	PETERBORO	PIED	PETER	PETER
ROBERT	QUEBEC	QUEEN	QUEBEC	QUEBEC	QUILLE	QUEEN	QUEEN
RACUL	ROMEO	ROBERT	ROCHESTER	ROCHESTER	RIEN	ROBERT	ROBERT
SUZANNE	SIERRA	SUGAR	SHERBROOKE	SHERBROOKE	SEL	SUGAR	SUGAR
THERESE	UNION	TOM	TORONTO	TORONTO	TEFE	THOMAS	TOM
USILE	VICTOR	UNION	UTICA	UTICA	UTILE	UNION	UNION
VICTOR	WISKEY	VICTOR	VANCOUVER	VANCOUVER	VERT	VICTORY	VICTOR
WILLIAM	EXTRA	WILLIAM	WINNIPEG	WINNIPEG	WATT	WILLIAM	WILLIAM
XAVIER	YANKEE	X-RAY	X-RAY	XAVIER	XAVIER	X-RAY	X-RAY
YVES	ZOULOU	YELLOW	YARMOUTH	YARMOUTH	YACET	YOUNG	YOUNG
ZOE		ZEBRA	ZEALAND	ZEALAND	ZOUAVE	ZERO	ZERO

CARRIBEAH

CHINA

COSTA RICA

CUBA

	Domestic Tel. Ser.	Internat. R/T Ser.	Fuerza Publica	Mod. of NATO	Military	Official
AAA	ASIA	ALFRED	ADAM	ALFA	AAA	ABEL
ADLIVAR	BOHAY	BENJAMIN	ALFNO	BRAVO	BOYA	ABELLO
CARLOS	CHINA	CHARLIE	CARLOS	CARLOS	CARLOS	CARLOS
DELITO	DENMARK	DAVID	DAVID	DELTA	DEDO	DADO
EISA	ENGLAND	EDWARD	ELENA	ECHO	EVA	ELOY
FRANCISCO	FRANCE	FRAKX	FRAECIA	FRAECL.	FUSIL	FEO
GENERAL	GENEVAY	GEORGE	GABRIEL	GOLF	GOLFRA	GAGO
ECLANDA	HARBIN	HARRY	HACHE	EGKSL	HACHE	HACHE
TELIA	ICHAEO	ISAAC	INES	INDIA	INDIO	UNES
JULIO	JEHOL	JACK	JOHNS	JULIETT	JOTA	JONA
KILO	KOREA	KING	KILO	KILO	KILO	KAKI
LOIS	LOHCOY	KINGDOM	LAURA	LIMA	LEON	LONA
MARIA	MCCOOLIA	LONDON	MADRID	MIGUEL	MEDICO	MONTI
ROENA	MARKING	MARY	HORUEGA	NOVEBER	NULO	RENE
OPERA	OSLO	MARY	NATO	NATO	OSO	NATO
PERNO	PEIPING	OLIVER	OSCAR	OSCAR	PEPE	OCO
QUEBEC	QUEBEC	PETER	PEPE	PAPA	QUILLA	PEPE
ROBERTO	ROME	QUEBEC	QUITO	QUEBEC	REMO	QUINTAL
SAMUEL	SPAIN	ROBERT	RANCO	ROBEO	JAPO	RAYO
TOMAS	TIENTSIN	SAMUEL	SAMUEL	SIERRA	TITO	SAMFO
URUGUAY	UNION	TOMMY	TOMAS	TARJO	UVA	TETE
VICTOR	VIENNA	UNCLE	ULISES	UNIFORM	VACA	URPE
WHISKEY	WUCHAEC	VICTOR	VICTOR	VICTOR	WILY	VICTORLA
XILOPCK	X-RAY	WILLIAM	WILLIAM	WHISKEY	ESQUIS	WAJAY
YALKEE	YUEHAI	X-RAY	XILOPCKO	XILOPCKO	YARA	XEQU'S
ZOMA	ZURICH	YELLOW	YEMA	YANKEE	ZETA	YUNQUE
		ZEBRA	ZANORA	ZURU		ZAPOCE

CZECHOSLOVAKIA

DAM
 BOZENA
 CYRIL
 CENK
 DAVID
 KUBIER
 KIL
 FRANTISEK
 GUSTAV
 HELENA
 CHUDIM
 IVAN
 JOSEF
 KAREL
 LUDVIK
 LUBOCHNA
 MARIE
 NORBERT
 NITRA
 OTTO
 PETER
 QUIDO
 RUDOLF
 REHOR
 SVATOPLUK
 SIFIN
 TOMAS
 TOMEJ
 URBAN
 VACLAV
 "JUCETTE VE"
 XAVER
 YPSILON
 ZUZANA
 ZOFIE

DENMARK

AEGIR
 ANNA
 BETTY
 CECIL
 DORIS
 ENMA
 FRITZ
 GRETE
 HEDVIG
 IDA
 JUNO
 KIRSTEN
 LOTTE
 MUSSE
 NANCY
 OLGA
 ODIS
 PETRA
 QUIRTUS
 RIKKE
 SARA
 THYRA
 ULLA
 VEGA
 WILLY
 EXTRA
 YLAN
 ZEBRA
 AASE
 AEGIR
 ANNA
 BERNHARD
 CECILIE
 DAVID
 ERIK
 FREDERIK
 GEORG
 HAFS
 IDA
 JORAN
 KAREN
 LUDVIG
 MARIE
 NIKOLAJ
 ODIN
 SENSUND
 PETER
 QUINTUS
 RASMUS
 SOREN
 THEODOR
 ULLA
 VIIGO
 WILLIAM
 XEXES
 YESA
 ZACHARIAS

DOMINICAN REPUBLIC

Civilian
 Military
 Civilian
 Military
 AQUA
 BURRO
 CAMA
 DIABLO
 ERNESTO
 FEO
 GATO
 HIGBRE
 INDIO
 JARRO
 KILO
 LUIS
 MALO
 NINO
 NOHO
 OJO
 FERRO
 QUESO
 RIO
 SAITO
 TABLA
 UVA
 VACA
 WASHINGTON
 XABEKI
 YEGUA
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 ERNESTO
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 NOHO
 OJO
 FERRO
 QUESO
 RIO
 SAITO
 TABLA
 UVA
 VACA
 WASHINGTON
 XABEKI
 YEGUA
 ZORNA

E C U A D O R

E L S A L V A D O R

F I N L A N D

Air Force	Navy	Internat. R/°	Internat. Cable Cos.	Helsinki Tel.	Helsinki Tel.
ALFA	ALA	ALFRED	ARTHUR	AKSEL	AXEL
BRavo	BOKE	BENJAMIN	BENJAMIN	AKE	AKE
COCA	COY	CHARLES	CHARLIE OR CHARLES	AYRAS	ARLIO
CHARLIE	DEDO	DAVID	DAVID	BERTEL	BERTEL
EE SA	ECO	EDWARD	EDWARD	CAESAR	CAESAR
EGEO	FACIL	FEDERIC	FRANK	DAVID	DAVID
FACETRO	GAVIA	GEORGE	GEORGE	FRKKI	ETIK
GOLFO	HACHE	HARRY	HENRY	FREDRIK	FREDRIK
HOTEL	IDA	ISAAC	ISAAC	GUNNAR	GUNNAR
INDIA	JOTA	JACK	JOHN	HEIKKI	HENRICK
JULIETT	KILO	KING	KITTY	IIVO	IVAR
KILO	LUNA	LOSDON	LOUIS	JUHO	JOHAN
LIMA	NAR	MANFUEL	MARY	KALLE	KALLE
LIMA LIMA	HACAR	HELLY	NIGET	LASSE	LARS
MICRO	HATO	OLIVER	OLIVER	MATTI	MARTIN
INDIAR	OBRA	PETER	PETER	NILLO	NILS
HARO	PICO	QUEEN	QUEEN	OTTO	OTTO
OSCAR	QUEJA	ROBERT	ROBERT	OLJY	ORN
PAPA	RIO	SAMUEL	SAMUEL	PEKKA	PETER
QUEBEC	SOL	TOMMY OR	THOMAS	QUINTUS	QUINTUS
ROMEO	TACO	TOMAS	UNION	RUDOLF	RUDOLF
SIEBRA	UMA	UNCLE	VICTOR	SULO	SV EN
WAGO	VALE	VICTOR	WILLIAM	TORSTI	TORSTEN
UNION	DEBLE V	WILLIAM	X-RAY	URHO	URBAN
VICTOR	EUIS	X-RAY	YELLOW	VICTORI	VIKTOR
WEISSEY	* JCA	YELCH	ZERO	WILHO	WILHELM
X-RAY				XERXES	XERXES
YANKEE				YRJO	YNGVE
				ZAKARIAS	ZAKARIAS

FRANCE

French
ICAO

Tel.

Teleg.

ALFA	AMANCE	ALBERT	ANATOLE	ANATOLE	ANATOLE	ANATOLE	ANDRE
ALFAVO	BENJAMIN	BERNARD	BENJAMIN	BERNARD	BENJAMIN	BENJAMIN	BERNARD
CHARLES	CELESTIN	GABRIEL	CELESTIN	CELESTIN	CELESTIN	CELESTIN	CAMILLE
EMMA	DESIRE	DAVID	DESIRE	DESIRE	DESIRE	DESIRE	DESIRE
EDCO	EUGENE	ESTHER	EDOUARD	EDOUARD	EUGENE	EUGENE	ERNEST
FANTOM	FRANCOIS	FRANCOIS	FRANCOIS	FRANCOIS	EMILE	EMILE	FRANCOIS
GOLF	GASTON	GEORGE	GASTON	GASTON	FRANCOIS	FRANCOIS	GASTON
LOREN	HENRI	HOTEL	HENRI	HENRI	GASTON	GASTON	HENRI
EMMA	ISIDORE	INES	ISIDORE	ISIDORE	HENRI	HENRI	ISIDORE
JULIETTE	JOSEPH	JAMAQUE	JOSEPH	JOSEPH	INMA	INMA	JOSEPH
KILO	KLEBER	KEPLER	KLEBER	KLEBER	JOSEPH	JOSEPH	KLEBER
LELA	LOUIS	LOUIS	LAZARE	LAZARE	KLEBER	KLEBER	LUCIEN
NAIK	MARCEL	MICHEL	MARIE	MARISSE	LOUIS	LOUIS	MARCEL
ROCTAR	NICOLAS	NICOLAS	NICOLAS	NICOLAS	MARCEL	MARCEL	NAPOLEON
OSCAR	OSCAR	OSCAR	OCTAVE	OCTAVE	NICOLAS	NICOLAS	OCTAVE
PAPA	PIERRE	PARIS	PIERRE	PIERRE	OSCAR	OSCAR	PIERRE
QUEBEC	QUASIMODO	QUART	QUEBEC	QUEBEC	PIERRE	PIERRE	QUEBEC
SCHEO	RAOUL	ROME	ROBERT	ROBERT	QUINTAL	QUINTAL	HENRI
SIERRA	SUZANNE	SUZANNE	SAMUEL	SAMUEL	ROBERT	RACHEL	SUZANNE
TALGO	THERESE	THOMAS	THEODORE	THERESE	SUZANNE	SUZANNE	THERESE
UNIFORM	URSULE	UPSALA	URSULE	URSULE	THERESE	THERESE	URSULE
VICTOR	VICTOR	VICTOR	VICTOR	VICTOR	URSULE	URSULE	VICTOR
WHISKEY	WILLIAM	WILLIAM	WILLIAM	WILLIAM	VICTOR	VICTOR	WILLIAM
XEB-REI	XAVIER	XERES	XAVIER	XAVIER	WILLIAM	WILLIAM	XAVIER
YACHT	YVONNE	YORK	YVONNE	YVONNE	XAVIER	XAVIER	YVONNE
ZEBLAN	ZEPHIRIN	ZIRC	ZOE	ZOE	YVONNE	ZOE	ZOE

G E R M A N Y

German
ICAO

ALFA
BRAVO
CHARLIE
DELTA
ECHO
FOXTROT
GOLF
HOTEL
INDIA
JULIETT
KILO
LIMA
MIKE
NOVEMBER
OSCAR
PARA
RADIO
ROMEO
TANGO
ULFMAN
VICTOR
WHISKEY
XRAY
YANKEE
ZULU

AERGER
ANTON
BRUNO
CAPAR
CAPAR
CHARLOTTE
DORA
EMIL
FRITZ
GUSTAV
GUSTAV
HEINZ
HEINZ
IDA
JOT
KURFURST
LUDWIG
LUDWIG
MARIE
KORNPOL
OTTO
OSZ
PAULA
QUELLE
RICHARD
SIEGFRIED
TONI
ULRICH, UBIL
VICTOR
WILHELM
XANTHIPPI
ZET or
ZEPPELIN

Teleg.

ANTON
BRUNO
CAPAR
DORA
EMIL
FRITZ
GUSTAV
HEINZ
IDA
KURFURST
LUDWIG
MARIE
KORNPOL
OTTO
PALLO
QUELLE
RICHARD
SIEGFRIED
TONI
ULRICH
VILTON
WILHELM
XANTHIPPI
YPERM
ZEPPELIN

Wehrmacht

ANNA
BERTHA
CASAR
DANIEL
EMIL
FRIEDRICH
GUSTAV
HEINRICH
IDA
JAKOB
KAISER
LEOPOLD
MARIE
NIKLAUS
OTTO
PETER
QUELLE
ROSA
SOPHIE
THEODOR
ULRICH
VILTOR
WILHELM
XAVIER
YVERDON
ZURICH

Navy
1931

ANTON
BRUNO
CAESAR
DORA
EMIL
FRITZ
GUSTAV
HANS
IDA
JOT
KARL
LUCIE
MAX
NANTI
OTTO
PAUL
QUELLE
RICHARD
SOPHIE
TONI
ULRICH
VILTON
WILHELM
XANTHIPPE
ZET or
ZEPPELIN

Navy

ANTON
BRUNO
CAESAR
DORA
EMIL
FRITZ
GUSTAV
HANS
IDA
JOT
KARL
LUCIE
MAX
NANTI
OTTO
PAUL
QUELLE
RICHARD
SOPHIE
TONI
ULRICH
VILTON
WILHELM
LA
YPERM
ZET or
ZEPPELIN

GERMANY
(1-1-50)

GHANA

GUATEMALA

HUNGARY

GERMANY		GHANA	GUATEMALA	GUATEMALA	HUNGARY	HUNGARY	HUNGARY
Army	Tel.	Tel. Teleg. RR. Post	Tropical Radio Tel.	Tropical Radio Tel.	Internat Tel. Ser.	Hungarian Tel. Co.	Telecom Domestic Local Aircraft
ANDREW	ANDREW	ANDREW	ALFREDO	ALFRED	ALFRED	ANNA	ANNA
BERTHA	BERTRAM	BENJAMIN	BENJAMIN	BOY	BENJAMIN	ADAM	ANNA
CASAR	BERTA	CHARLIE	CARLOS	CHARLES	CHARLES	BALINT	BJARNI
DORA	CASAR	DAVID	DAVID	DAVID	DAVID	CECIL	CERES
EMIL	CHARLOTTE	EDWARD	ENRIQUE	EDWARD	EDWARD	DENEZ	DAVIO
FRIEDA	DORA	FREDERICK	FRANCISCO	FRANK	FRANCK	ELEMÉR	EINAR
GUSTAV	EMIL	GEORGE	GUSTAVO	GEORGE	GEORGE	EVA	FIMMUR
HENRICH	FRIEDRICH	HARRY	HORACIO	HARRY	HARRY	FERENC	GUNNAR
IDA	GUSTAV	ISAAC	INES	IDA	ISAAC	GABOR	HANNES
JAKOB	HENRICH	JACK	JACQUIN	JACK	JACK	HEDVIG	INGI
KONRAD	INA	KING	KILO	KING	KING	ILONA	JONAS
LUDWIG	JULIUS	LUCY	LUIS	LONDON	LONDON	JANOS	KRISTJAN
MARTHA	KAHFMANN	MARY	MARIE	MARY	MARY	KAROLY	LARUS
NORBPOL	LUDWIG	NELLIE	NICOLAS	NELLY	NELLIE	Lajos	MAGNUS
OTTO	MARTHA	OLIVER	OSCAR	OLIVER	OLIVER	MARIA	NIKOLA
PAULA	NORBPOL	PETER	PEDRO	PETER	PETER	NAPEOLEON	ODDUR
QUELLE	OTTO	QUEENIE	QUERETARO	QUEEN	QUEBEC	OLGA	OGMUNIR
RICHARD	OKONOM	ROBERT	RAFAEL	ROBERT	ROBERT	ODON	PETUR
SIEGFRIED	PAULA	SUGAR	SAMUEL	SAMUEL	SAMUEL	PETER	PORCIR
THEODORE	QUELLE	TOMMY	TOMAS	THOMAS	THOMAS	QU (KU)	Q (KU)
ULRICH	RICHARD	UNCLE	URSULA	UNCLE	UNCLE	ROZSA	RAGNAR
VILLA	SAMUEL	VICTOR	VICTOR	VICTOR	VICTOR	SAROLTA	SIGURD
WILHELM	SCHULE	WILLIAM	WILLIAM	WILLIAM	WILLIAM	TIBOR	PETUR
KARLHILFE	THEODOR	XMAS	RAYOS X	X-RAYS	X-RAY	UBUL	UNNUR
YPSILON	ULRICH	YELLOW	YOLANDA	YELLOW	YELLOW	VILMOS	VALDI
ZEPHYR	ZEBRA	ZEBRA	ZAPATO	ZEBRA	ZEBRA	IKSZ	TVOFARI
	VIKTOR					YPSILON	KROSS
	WILHELM					ZOLTAN	YESTER
	KARLHILFE						
	YPSILON						
	ZEPHYR						

13

I N D I A

Posts
Telug

ACRA
BONGRAY
CALCUTTA
DELHI
ELLORA
FARIDABAD
GHALICR
HOOGELY
INDOYE
JAIPUR
KASEMIR
LUCKNOW
MADEAS
MAGPUR
OOTY
POONA
QUILCE
RAJKOT
SURAT
TALICEE
UJJAIN
VLJAY
WARDEA
X-RAY
YELLOW
ZANER

PIT Inter-
Office Basis

ANDREW
BENJAMIN
CHARLIE
DAVID
EDWARD
FREDERICK
GEORGE
HARDY
ISAAC
JACK
KING
LOUISE
MERRY
NANCY
OLIVER
PETER
QUEENY
ROBERT
SUGAR
TOMMY
UNCLE
VICTOR
WILLIAM
X-RAY
YELLOW
ZERRA

I N D O N E S I A

Military
Civilian

ABANG
BARU
DASAN
EKOR
FAHAM
GULURU
HABIS
IBU
JANG
KAMAR
LAMA
MAKAN
NAMA
ORANG
PINTAR
RAPAT
SAFU
TAHU
UYTUK
WAKIL
ZAMAN

I R A N

Farsi Alphabet
(Persian)

A AELEP, AIT
B BEH
C or S OEH
CH CHEH
D DAHL
P FEH
G GHF
GH or Q GHAF, GRAIN
H HEH (HOFTI)
H HEH (HAVVAZ)
J JERH
K KAHF
KH or X KHEH
L LAHM
M MEEM
N NOON
P FEH
GH or Q GHAF, GRAIN
R REH
S SAHD
S SEEN
C or S CEH
SH SHEEN
T TAH, TEH
V VAHV
KH or X KEH
Y YEH
Z ZAH, Z'HD
Z ZAH, ZEH
LE ZHEH

I S R A E L

Hebrew

ALEPH
BETH
GIMEL
DALETH
HE
VAU
ZAYIN
CHETH
TETH
YODH
CAPH
LAMEDH
MEM
NUN
SAMEKH
'AYIN
FE
SADEH
KOPH
RESH
SIN
SHIN
TAV

I T A L Y

Italian ICAO	Multi- Accent	PF TT		Marina		Tel.
ALFA	ARABELLA	ASTI	ANNA	ALFA	ALBERTO	ANCONA
BRavo	BARIORCE	BARI	BATTISTA	BETA	BERNARDO	BARI
CHARLIE	COLOMBA	COMO	CARLO	COMO	CARMELO	COMO
DELTA	DELLISQUERIE	DEGO	DAVIDE	DELTA	DAVIDE	DOMENOSOLA
ECCO	ELFANTE	ERBA	ERNESTO	EMPOLI	ESTER	EMPOLI
FOXTROT	FILIBUSTIERO	FORLI	FREDERICO	EFFE	FRANCESCO	FIRENZE
GOLF	GLORIOSO	GENOVA	GIOVANNI	GAMMA	GIORGIO	GENOVA
HOTEL	HALLO-HURRAH	HOTEL	ACCA	ACCA	HOTEL	HOTEL
INDIA	INIMITABLE	IMOLA	ISIDORO	IMOLA	INDIA	IMOLA
JULIETT	JUBILEO	JESI	LUIGI	IOTA	JAMAICA	LIVORNO
KILO	KILOGRAM	KURSAAL	CAPPA	CAPPA	KEPPELO	MILANO
LIMA	LIMOSKA	LODI	LUIGI	LANDA	LUIGI	RA POLI
MIKE	MARINARO	MOZZA	MARIA	MACCHINA	MICHELE	OTRANTO
NDCTAR	NUMERALE	NARNI	NICOLA	NAVE	NICCOLO	PADOVA
OSCAR	OPERETTA	ORMEA	OLGA	OMEGA	OSCAR	QUADERNO
PAPA	PROPAGANDA	PAVIA	PIETRO	PO	PARIQI	ROMA
KEBEK	QUANTITA	QUARTO	QUINTINO	QUAGLIA	QUARTO	SAVONA
ROMEZ	RIGOLETTO	ROMO	RODOLFO	RO	ROIA	TORINO
SIERRA	SASSAPRASO	SIENA	SUSANNA	SIGMA	ROMASO	UDINE
TANGO	TARANZILLA	TRENTO	TERESA	TAU	SUSANNA	VENEZIA
TUSTIORM	TRONATONZ	UDINE	UMBERTO	UDINE	UPSALA	ZARA
VICTOR	UNIFORME	VEROCIA	VITTORIO	VELA	VINCENZO	
WHISKEY	VIOLINO	VIDOPPIA	VU DOPPIA	DOPPIOVELVA	WILLIAM	
EX-FEY	WIENERWURST	IX	ICS	ICS	XERES	
LAKEI	EXPERIMENT	IGPECO	IR: LION	IPSILON	YONK	
TULU	JAMASOTO	ZARA	ZURIGO	ZARA	ZIRCO	
	ZIGZAG					

JAPANESE

MEXICAN

Internat. Tel
Telegr. Co.

Tel.
R/T

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A ASAHI KO "A"
 I I, EO, HA EO "I"
 U UMI EO "U"
 E EIGO EO "E"
 O OAI EO "O"

 KA KAKASE KO "KA"
 KI KIKI EO "KI"
 KU KIKUMA KO "KU"
 KE KIKIHI KO "KE"
 KO KODOKO EO "KO"

 SA SAKURA KO "SA"
 SHI SHISEKI KO "SHI"
 SU SUZUKI KO "SU"
 SE SEKAI EO "SE"
 SO SOROBAN EO "SO"

 TA TABAKO EO "TA"
 CHI CHIDORI EO "CHI"
 TEU TEIJI, KAKE EO "TSU"
 TE TEIJI EO "TE"
 TO TOKYO EO "TO"
 EA EACOTA EO "EA"
 NI NIPPON EO "NI"
 FU FUJIAN EO "FU"
 ES EISEI EO "ES"
 EO EISEI EO "EO"

HA HAGAKI NO "HA"
 HI HIKOKI NO "HI"
 FU FUJISAN NO "FU"
 HE HEIWA NO "HE"
 HO HOKEN NO "HO"

 MA MATCHI NO "MA"
 MI MIKASA KO "MI"
 KU MUSEN NO "MU"
 ME MELJI NO "ME"
 MO MOMIJI NO "MO"

 YA YAMATO NO "YA"
 YU YUMIYA NO "YU"
 YO YOSHINO NO "YO"

 RA RAJIO NO "RA"
 RI RINGO NO "RI"
 RU RUSUI NO "RU"
 RE REIJI NO "RE"
 RO ROMA NO "RO"

 WA WARABI NO "WA"
 I IDO KO "I"
 O OWARI NO "O"

ALA
 BOTA
 CRUZ
 DEDO
 ESTAC/
 FOCO
 GATO
 HACHE
 INDIO
 JARRO
 KILO
 LITRO
 MANO
 NEGRO
 NANDU
 OSO
 PALMA
 QUESO
 RATA
 SATAB
 TOREO
 UIRACA
 VACA
 WASHINGTON
 KOCHITL
 YATE
 ZAPATO

ANHA
 BERNHARD
 JORGELIS
 DIRK
 EDUARD
 FERDINAND
 GERARD
 HENDRICK
 ISAAC
 JACOB
 KAREL
 LODEWIJ
 MARIE
 NICO
 OTTO
 PIETER
 QUOTIENT
 RUDOLF
 SIMON
 TEUNIS
 UTRECHT
 VICTOR
 WILLEM
 XAVIER
 YMUTSEN
 ZAANDAM

ANWA
 PERNARD
 CORNELI
 DIRK
 EDUARD
 FERDINAND
 GERARD
 HENDRIK
 IZAAK
 JOHANNES
 KAREL
 LODEWIJ
 MARIE
 NICO
 OTTO
 PIETER
 QUALFRANT
 RUDOLF
 SIMON
 THEODOOR
 UTRECHT
 VICTOR
 WILLEM
 XAVIER
 YMUTSEN
 ZAANDAM

NETHERLANDS
(contd)

NEW YORK HONOLULU PHOENIX SAN FRANCISCO

Dutch PTT Ser.	Post Teleg.	Post	Tel.	Tel.	Tel. Teleg Ser
ANNA	ALFRED	ALFRED	ANDREW	ANDRÉ	AERLIC
BERNHARD	BOE	BOE	BENJAMIN	ADOT	ANNA
CORNELIS	CHARLIE	CHARLIE	CHARLIE	ANNA	ÅSE
DAVID	DAVID	DAVID	DAVID	BIERGE	BERNHARD
EDWARD	EDWARD	EDWARD	EDWARD	CESAR	CAESAR
FREDERAND	FRANK	FRANK	FREDERICK	DAVID	DAVID
GEORGE	GEORGE	GEORGE	GEORGE	EVA	EDITH
HARRY	HARRY	HARRY	HARRY	FREDRIK	FREDRIK
ISAAK	ISAAK	ISAAK	ISAAK	GUSTAV	GUSTAV
JAN	JAMES	JAMES	JACK	HARALD	HARALD
KAREL	KATE	KATE	KING	INGA	IVAR
LOUIS/LJK	LAURA	LAURA	LUCY	JACOB	JOHAN
MARIE	MARY	MARY	MARY	KAREN	KARIN
NICO	NELLIE	NELLIE	NELLIE	LARS	LUDVIG
OTTO	OLIVER	OLIVER	OLIVER	MARIE	MARTIN
PETER	PETER	PETER	PETER	NILS	NILS
QUENTIN	QUEEN	QUEEN	QUEENIE	OLGA	OLIVIA
ROOLF	ROBERT	ROBERT	ROBERT	ØRNULF	ØSTEN
SIMON	SARAH	SARAH	SUGAN	PETER	PETER
TOM	TOM	TOM	TOMMY	QUEBEC	QUENTIN
OTTOUST	UNCLE	UNCLE	UNCLE	RICHARD	RUKARD
VICTOR	VIOLET	VIOLET	VICTOR	SIGRID	SIGRID
WILLEM	WALTER	WALTER	WILLIAM	TORA	TEODOR
WILHELM	EXTRA	EXTRA	EMAS	ULRIK	ULRIK
YOUNG	YOUNG	YOUNG	YELLOW	BERGELT V	BERGELT
ZINC	ZINC	ZINC	ZEBRA	BERGELT V	BERGELT
				NOVA	NOVA

SPANISH

SWEDEN

Rel Telegr. Cable Cos.	Spanish ICAO	Spanish ICAO 1947	Formerly Used by Govt. Org.	Military	Official	Standard Airlines
ALFOLA	ALFA	AMA	AVILA	ADAM	AREL	ADAM
BENATRIZ	BRAVO	BRAZIL	BAYCENOSA	AKS	BRUNO	AKE
CARLOS	CHARLIE	COCO	CABIZ	ARLIG	CARLOS	ARLIG
DOMINGO	DELTA	DADO	DIBANARCA	REPTIL	DAINO	BERTIL
EDUARDO	ECCO	ELGA	ESPAÑA	CEBAR	ELCO	CEBAR
FRANCISCO	FOXTROT	FIESTA	FRANCLA	DAVID	PEO	DAVID
GUILLEMO	GOLF	GATO	OSANADA	ERIK	LAGR	ERTI
HENRI	HOTEL	HOMBRE	HUGLY	FILIP	HACFE	FILIP
ISLA	INDIA	INDIA	ITALIA	GUSLAV	IBEE	GUSTAV
JULIO	JULIETT	JULIO	JASE	HARALD	JOTA	HELOF
KILO	KILO	KILC	KILOGRAMO	IVAR	KAKC	IVAR
LUIS	LIMA	LUTS	LOGROÑO	JOHAN	LONC	JOHAN
MARIA	MIKE	MAMA	MAURID	KALLE	MONTE	KALLE
NICARAG	NECTAR	NORMA	NAVAFIA	LUDVIG	NEKE	LUDVIG
OSCAR	OSCAR	OPERA	NOTERIA	MARTIN	HATO	MARTIN
PEDRO	PAPA	PERU	OVIEDO	NIKLAS	OSC	EDWARD
QUINTANA	KEBEK	QUEBEC	PAMPI	OLGF	PEPE	OSCAR
ROBERTO	ROMEO	ROSA	QUESO	OSTIN	QUINTAL	OLAV
SANTIAGO	SIERRA	SARA	RONDA	PETTER	RAKO	PETTER
TOMA	TANGO	TERAS	SEVILLA	SVENYUS	SAST	TOMAS
URSULA	RULFOGEM	BRUGLAI	POLEDO	RUDOLF	TOTE	URSULA
VICTOR	VICTOR	VICTOR	URDELL	SIGURD	UREK	VICTOR
WASHINGTON	WHISKEY	WHISKEY	VINOSLA	TORF	VICTORCS	WASCO
XRAY	XRS-XRY	EQUIS	WENZESLAO	URBAN	WAJA	XRAY
YOLANDA	YATZY	YOLANDA	WENZESLAE	VIKTOR	AEQU	YOLANDA
ZETA	ZETA	ZETA	ZARAGOZA	ERIK	ZAPC	ZETA

SWITZERLAND

Federal
Tel. Co.
German

ANNA
BERTHA
CASAR
DANIEL
EMIL
FRIDRICH
GUSTAV
HEJERTICH
IDA
JAKOB
KAISER
LEOPOLD
MARIE
NIKLAUS
OTTO
PETER
QUELLE
ROSA
SOPHIE
THEODOR
ULRICH
VIKTOR
WILHELM
XAVIER
YVERIXE
ZURICH

Federal
Tel. Co.
French

ANNA
BERTHE
CESILE
DANIEL
EMILE
FRANÇOIS
GUSTAVE
HENRI
IDA
JEANNE
KILLO
LOUISE
MARIE
NICOLAS
OLGA
PAUL
QUITTANCE
ROBERT
SUZANNE
THERESE
ULYSSE
VICTOR
WILLIAM
XAVIER
YVETTE
ZURICH

Federal
Tel. Co.
Italian

ANNA
BATTISTA
CARLO
DAVID
ERNESTO
FEDERICO
GIOVANNI
ACCA
ISIDORO
ILUNGO
CAPP
LUGI
MARIA
NICOLA
OLGA
PIETRO
QUINTINO
RODOLFO
SUBANNA
TERESA
UMBERTO
VITTORIO
VU DOPPIA
ICS
IPILON
ZURIGO

Military

ANNA
ANNA-EMIL
BERTA
CARLO
DANIEL
EMIL
FIGARO
GUS PAV
HEPPOLYT
IDA
JAKOB
KILLO
LEOPOLD
MARIA
NICOLA
OLGA
OLGA-EMIL
PIETRO
QUASI
ROSA
SOPHIE
THEODOR
ULRICH
ULRICH-EMIL
VIKTOR
WILLY
XAVIER
YVONNE
ZENITH

Former
Military

AIROLO
AEGENI
BERNE
COLOMBIER
CHLASSO
DAVOS
EMMENTHAL
ECHALLENS
FAJDO
GOTTHARD
HOSPENTHAL
INTERLAKEN
JULIER
KILLO
LAISANNE
MOETREUX
NEUCHATEL
OLTEN
OBERLIKON
PAYERNE
QUINTO
RIGI
SEM PACH
TELL
URI
URZ LINGG
VEV EY
WITTSCHUR
XAVIER
YVEUXE
ZURICH

ANTON
ANZER
BRUNO
CAFAR
CHARLOTTE
DORA
EMIL
FRITZ
GUSTAV
HEINE
LIA
LOT
KURFURST
LUDWIG
MARIE
NORDPOL
OTTO
OSE
PAULA
QUELLE
RICHARD
SIEGFRIED
TONI
ULRICH
UBEL
VIKING
WILHELM
XAVIER
YVONNE
ZAPPEN-EN

ALPHABETIC LIST OF CITIES

Words: Tel. Italian	Long-Distance Tel. Local Merchants German	Long-Distance Tel. Local Merchants French	Long-Distance Tel. Local Merchants Slovene	Long-Distance Tel. Local Merchants Slovene-Croat
ASTI	ALBRECHT	AMIEES	APACE	APATIN
BARI	BERTA	BOULOGNE	ALED	BLOCKAD
CAENNA	CHRISTUS	CLAIRMONT	CELJE	CELINE
CONDOSOLA	DOROTHEA	DIJON	CRNA	CACAR
EMPOLI	EDWARD	EPINAL	DOBNA	SUPRIJA
FOSSIA	FRIEDRICH	FALAISE	ELEKTRA	DUBROVIT
GENOVA	GERERUD	GRAVIGNY	FRANCOZ	DAKOV
HOTEL	HOTEL	HAVESMORTE	GOLNIK	ERCEKNOVA
ISIDA	ISIDOR	HOTEL	HRASTNIK	FRANCOZ
JESI	JESUS	ISTRES	IVAN	GOPIĆ
KAPPA	KURT	JARVILLE	JESENICE	HRVATSK
LIVONSO	LEONORA	KERL	KAMNIK	IMOSICE
MILANO	MATHIAS	LIMOGES	LITLJA	SAJJE
NOVARA	ROBERT	MARSEILLES	MARIBOR	KOTOF
ONERZO	OTTO	NANTES	NOVOMEST	LIVNO
PALEMO	PETER	ORAN	ORMOZ	MITROV
QUARINERO	QUARTETT	PARIS	PLAVINA	NOVA
ROMA	ROSA	QUINTIN	RAKVE	SRBIN
SIENA	SIEGFRIED	ROUEN	SEVNICA	SLJANA
SOZZILLA	TEODOF	SEDAN	SMARJE	SLJANA
TRINIC	ULRIKE	TROUVILLE	TROYAN	TRAVNIK
UDINE	VIKTOR	USSON	UPITELJ	TRAVNIK
VERONA	WALTER	VERTUN	VRAZKO	TRAVNIK
VIGONZIA	XENONICE	WAGRAM	XAVIER	TRAVNIK
VY	YESILCA	XINOCOURT	YPSILON	TRAVNIK
VALECA	ZURICH	YPSON	ZAGORJE	TRAVNIK
ZARA		ZURICH	ZTR	TRAVNIK

UNITED KINGDOM

Telephone		Old RAF 1919	RAF 1920	RAF 1934	Royal Navy	Old Br. Army	
ANDREW	ALBERT	ACK	ACK	APPLE	APPLES	ACK	APPLE
BENJAMIN	BERNARD	BEER	BEER	BEER	BEER	BEER	BEER
CHARLIE	CARMEN	CHARLIE	CHARLIE	CHARLIE	CHARLIE	CHARLIE	CHARLIE
DAVID	DAVID	DON	DON	DOG	DUFF	DON	DICK
EDWARD	ESTHER	EDWARD	EDWARD	EDWARD	EDWARD	EDWARD	EDWARD
FREDERICK	FRENCH	FREDDIE	FREDDIE	FREDDIE	FREDDIE	FREDDIE	FREDDY
GEORGE	GEORGE	GEORGE	GEORGE	GEORGE	GEORGE	GEORGE	GEORGE
HARRY	HOTEL	HARRY	HARRY	HARRY	HARRY	HARRY	HARRY
ISAAC	INDIA	INK	INK	INK	ISAAC	INK	INK
JACK	JAMAICA	JOHNNIE	JOHNNIE	JOHNNY	JAMES	JOHNNIE	JIG
KING	KEPLER	KING	KING	KING	KING	KING	KING
LUCY	LOUTS	LONDON	LONDON	LONDON	LONDON	LONDON	LONDON
MARY	MICHAEL	MONKEY	MONKEY	MOTHER	MONKEY	MONKEY	MOTHER
NELLIE	NICHOLAS	NUTS	NUTS	NUTS	NUTS	NUTS	NUTS
OLIVER	OSCAR	ORANGE	ORANGE	ORANGE	ORANGE	ORANGE	ORANGE
PETER	PARIS	PIF	PIF	PETER	PUDDING	PIP	PETER
QUEENIE	QUART	QUEEN	QUEEN	QUEENIE	QUEENIE	QUEEN	QUEENIE
ROBERT	ROMA	ROBERT	ROBERT	ROBERT	ROBERT	ROBERT	ROBERT
SUGAR	SUSAN	SUGAR	SUGAR	SUGAR	SUGAR	SUGAR	SUGAR
TOMMY	THOMAS	TOCK	TOC	TOMMY	TOMMY	TOCK	TOC
UNCLE	UPSALA	UNCLE	UNCLE	UNCLE	UNCLE	UNCLE	UNCLE
VICTORY	VINCENT	VICTOR	VIC	VICTOP	VINEGAR	VIC	VICK
WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM
XMAS	XERES	X-RAY	X-RAY	XRAY	X-RAY	X-R	X-RAY
YELLOW	YORK	YORKER	YORKER	YORK	YORKER	YORKER	YORK
ZEBRA	ZINC	ZEBRA	ZED	ZEBRA	ZEBRA	ZEBRA	ZEBRA

UNITED STATES

Military 1908	Military/ 1908	Military 1913	Military 1914	Military 1920	Military World War 1920	Military 1972
ACTOR	ASH	AFTER	ABLE	AFFIRMATIVE	ABLE	AFFIRMATIVE
BAKER	BACK	BATTLE	BOY	BOY	BOY	BAKER
CARTER	CHAIN	CAST	CAST	CAST	CAST	CAST
DIVER	DOG	DOG	DOG	DOG	DOG	DOG
EAGLE	EGG	EAGLE	EASY	EASY	EASY	EASY
FISHER	FOX	FRAK	FOX	FOX	FOX	FOX
GANGWAY	GO	GEORGE	GEORGE	GEORGE	GEORGE	GEORGE
HALLIARD	HORSE	HAVE	HAVE	HAVE	HAVE	HYPPO
HERDOT	ICY	ISLAND	ITEM	INTERROGATORY	ITEM	INTERROGATORY
JOCKEY	JACK	JACK	JIG	JIG	JIG	JIG
KNAPSACK	KING	KING	KING	KING	KING	KING
LAPSE	LASH	LOVE	LOVE	LOVE	LOVE	LOVE
MUGGET	MULE	MONEY	MIKE	MIKE	MIKE	MIKE
NEPTUNE	NET	NOISE	HAN	NEGATIVE	HAN	NEGATIVE
OYSTER	OAK	OBCE	OBCE	OPTIONAL	OPAL	OPTIONAL
PISTOL	PAGE	PISTOL	PUP	PREPARATORY	PUP	PREPARATORY
QUADRANT	QUAIL	QUACK	QUACK	QUACK	QUEBEC	QUACK
RIFTER	RAFF	RUSH	RUSH	ROGER	RASH	ROGER
SHIPMATE	SCOUT	SAIL	SAIL	SAIL	SAIL	SAIL
TOPSAIL	TIDE	TARE	TARE	TARE	TARE	TARE
UNLOAD	USE	UNION	UNIT	UNIT	UNIT	UNIT
VESSEL	VAST	VICE	VICE	VICE	VICE	VICE
WINDAGE	WITCH	WATCH	WATCH	WATCH	WATCH	WILLIAMS
X-RAY	X-RAY	X-RAY	X-RAY	X-RAY	X-RAY	X-RAY
YACHTMAN	YACHT	YOKE	YOKE	YOKE	YOKE	YOKE
ZEBRA	ZOO	ZED	ZED	ZED	ZED	ZED

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UNITED STATES

Military 1925	Military 1936	Military 1941	Military 1941	Military 1942	Military US-UK 1943	Military US-UK 1944
AFFIRMATIVE	AFIRM	AFIRM	AFIRM	ADAM	ABLE	ABLE
BAKER	BAKER	BAKER	BAKER	BAKER	BAKER	BAKER
CAST	CAST	CAST	CAST	CHAP	CHARLIE	CHARLIE
DOG	DOG	DOG	DOG	DOG	DOG	DOG
EASY	EASY	EASY	EASY	EASY	EASY	EASY
FOX	FOX	FOX	FOX	FOX	FOX	FOX
GEORGE	GEORGE	GEORGE	GEORGE	GEORGE	GEORGE	GEORGE
HYPO	HYPO	HYPO	HYPO	HOW	HOW	HOW
INTERROGATORY	INT	INTER	INTERROGATORY	ITEM	ITEM	ITEM
JIG	JIG	JIG	JIG	TIG	JIG	JIG
KING	KING	KING	KING	KING	KING	KING
LOVE	LOVE	LOVE	LOVE	LOVE	LOVE	LOVE
MIKE	MIKE	MIKE	MIKE	MIKE	MIKE	MIKE
NEGATIVE	NEGAT	NEGAT	NEGAT	NAN	NAN	NICKEL-NEGAT
OPTION	OPTION	OPTION	OPTION	OBOR	OBOR	OBOR
PREPARATORY	PREP	PREP	PREP	PETER	PETER	PETER
QUACK	QUEEN	QUEEN	QUEEN	QUEEN	QUEEN	QUEEN
ROGER	ROGER	ROGER	ROGER	ROGER	ROGER	ROGER
SAIL	SAIL	SAIL	SAIL	SUGAR	SUGAR	SUGAR
TARE	TARE	TARE	TARE	TARE	TARE	TARE
UNIT	UNIT	UNIT	UNIT	UNCLE	UNCLE	UNCLE
VICE	VICTOR	VICTOR	VICTOR	VICTOR	VICTOR	VICTOR
WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM
X-RAY	X-RAY	X-RAY	X-RAY	X-RAY	X-RAY	X-RAY
YOKE	YOKE	YOKE	YOKE	YCKE	YOKE	YOKE
ZED	ZED	ZED	ZED	ZED	ZEBRA	ZEBRA

UNITED STATES

ITU 1927	ITU	ITU 1932-1947	ICAO 3rd Com. 1949	ICAO Annex 10 1952	ATT	ATT Overseas
AMSTERDAM	AMSTERDAM	AMSTERDAM	ALFA	ALFA	ALICE	ALFRED
BALTIMORE	BALTIMORE	BALTIMORE	BETA	BRAVO	BERTHA	BENJAMIN
CANAL	COSTA RICA	CASABLANCA	COCA	CHARLIE	CHARLES	CHARLIE
DANMARK	DANMARK	DANMARK	DELTA	COCA	DAVID	DAVID
EDDISTON	EDISON	EDISON	ECHO	DELTA	EDWARD	EDWARD
FRAUCISCO	FLORIDA	FLORIDA	FOXTROT	ECHO	FRANK	FRANK
GIBRALTAR	GALLIPOLI	GALLIPOLI	GOLF	FOXTROT	GEORGE	GEORGE
HAWAII	HAVANA	HAVANA	HOTEL	GOLF	HENRY	HARRY
ITALY	ITALIA	ITALIA	INDIA	HOTEL	IDA	ISAAC
JERUSALEM	JERUSALEM	JERUSALEM	INDIA	INDIA	JAMES	JACK
KILOGRAMME	KILOGRAMME	KILOGRAMME	KILO	JULIETT	KATE	KATE
LIVERPOOL	LIVERPOOL	LIVERPOOL	LIMA	KILO	LOUIS	LONDON
MADAGASCAR	MADAGASCAR	MADAGASCAR	METRO	LIMA	MARY	MARY
MOSCOW	NEW YORK	NEW YORK	NECTAR	METRO, MIKE	NELLY	NELLIE
OSLO	OSLO	OSLO	OSCAR	NECTAR	OLIVER	OLIVER
PARIS	PARIS	PARIS	POLLA	NOVEMBER	PETER	PETER
QUEBEC	QUEBEC	QUEBEC	QUEBEC	OSCAR	QUAKER	QUEBEC
ROME	ROME	ROME	ROMEO	PAPA	ROBERT	ROBERT
SANTIAGO	SANTIAGO	SANTIAGO	SIEFRA	QUEBEC	AMIE	AMY
TRIPOLI	TRIPOLI	TRIPOLI	TANGO	ROME	ROMA	ROMA
UPCALA	UPCALA	UPCALA	UNION	SIERRA	UTAH	UTAH
VALENCIA	VALENCIA	VALENCIA	VICTOR	TANGO	VICTOR	VICTOR
WASHINGTON	WASHINGTON	WASHINGTON	WETSKEY	UNION, UNIFORM	WILLIAM	WILLIAM
XANTIPPE	XANTIPPE	XANTIPPE	X-RAY	VICTOR	X-RAY	X-RAY
YOKOHAMA	YOKOHAMA	YOKOHAMA	YANKEY	WHISKEY	YOUNG	YOUNG
ZURICH	ZURICH	ZURICH	ZEBRA	EXTRA	ZEPH	ZEPH
				X-RAY		
				YANKEL		
				ZUL		

UNITED STATES

Gen. Ser. No. 1922-1923	WJ 1912	WU 1913	WU 1918	WU 1942	RCA	RCA	DATA 1947
ACK	ADAMS	ADAMS	ADAMS	ADAMS	ARTHUR	ARTHUR	ALPHA
BOY	BOSTON	BOSTON	BOSTON	BOSTON	BENJAMIN	BENJAMIN	BETA
CAZ	CHICAGO	CHICAGO	CHICAGO	CHICAGO	CHARLIE	CHARLIE	CHARLIE
DOH	DENVER	DENVER	DENVER	DENVER	DAVID	DAVID	DELTA
E	EDWARD	EDWARD	EDWARD	EDWARD	EDWARD	EDWARD	EDWARD
F	FRANK	FRANK	FRANK	FRANK	FRANK	FRANK	FOX
GOGO	GEORGE	GEORGE	GEORGE	GEORGE	GEORGE	GEORGE	GRAMMA
F	HENRY	HENRY	HENRY	HENRY	HENRY	HENRY	HAVANA
I	IRELAND	IDA	IDA	IDA	IDA	ISAAC	ITALY
JIG	JERSEY	JERSEY	JOHN	JOHN	JAMES	JOHN	JUPITER
K	KING	KING	KING	KING	KATE	KITTY	KILO
L	LINCOLN	LINCOLN	LINCOLN	LINCOLN	LOUIS	LOUIS	LITER
EMMA	MARY	MARY	MARY	MARY	MARY	MARY	MAESTRO
N	NEWARK	NEWARK	NEW YORK	NEW YORK	NELLY	NATHAN	NORMA
O	OCEAN	OCEAN	OCEAN	OCEAN	OLIVER	OTTO	OPERA
PIP	PETER	PETER	PETER	PETER	PETER	PETER	PERU
QUASH	QUEEN	QUEEN	QUEEN	QUEEN	QUAKER	QUEEN	QUEBEC
R	ROBERT	ROBERT	ROBERT	ROBERT	ROBERT	ROBERT	ROGER
ESSES	SUGAR	SUGAR	SUGAR	SUGAR	SAMUEL	SAMUEL	SANTA
TOC	TEXAS	TEXAS	THOMAS	THOMAS	THOMAS	THOMAS	THOMAS
U	UNION	UNION	UNION	UNION	UNION	UNION	URSULA
VIC	VIOLET	VIOLET	VICTOR	VICTORY	VICTOR	VICTOR	VICTOR
W	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WHISKEY
X	X-RAY	X-RAY	X-RAY	X-RAY	X-RAY	X-RAY	X-RAY
YOKE	YALE	YALE	YOUNG	YOUNG	YOUNG	YELLOW	YORK
ZED	ZERO	ZERO	ZERO	ZERO	ZEBRA	ZERO	ZERO

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UNITED STATES
(contd)

URUGUAY

APCO	ARRL R/T	AAR 1932	Official	Civilian	Army	Navy
ADAM	ADAM	ADAMS	ALICIA	ALICIA	AIDA	ANA
BOY	BAKER	BOSTON	BEATRIZ	BEATRIZ	BARTOLO	BERTA
CHARLES	CHARLIE	CHICAGO	CAROLINA	CAROLINA	CARLOS	CARLOS
DAVID	DAVID	DENVER	DOROTEA	DOROTEA	DOMINGO	DORA
EDWARD	EDWARD	EDWARD	EVA	EVA	EDUARDO	EVA
FRANK	FRANK	FRANK	FRANCISCA	FRANCISCA	FELIPE	FLORA
GEORGE	GEORGE	GEORGE	GUILLEMINA	GENOVEVA	GERARDO	GUSTAVO
HENRY	HENRY	HENRY	HOMBRE	HOMBRE	HECTOR	HECTOR
IDA	IDA	IDA	INES	INES	INES	INES
JOHN	JOHN	JOHN	JULIA	JOSEFA	JOSE	JULIA
KILO	KING	KING	KILO	KILO	KEPIS	KETTY
MICHAEL	LEWIS	LINCOLN	LUCIA	LUCIA	LUIS	LUISA
MARY	MARY	MARY	MARIA	MARIA	LLAVE	MARIA
MICHAEL	MARY	NEW YORK	NATALIA	NATALIA	MANUEL	MENA
OCEAN	OTTO	OCEAN	OPHELIA	OPHELIA	NELSON	OLGA
PAUL	PETER	PETER	PETRONA	PETRONA	NANDY	PABLO
QUEEN	QUEEN	QUEEN	QUINTANA	QUINTANA	OSCAR	QUEJA
ROBERT	ROBERT	ROBERT	ROSA	ROSA	PEDRO	ROSA
SAM	SUSAN	SUGAR	SARA	SARA	QUINTA	SOFIA
CON	THOMAS	THOMAS	TERESA	TERESA	ROSA	TOMAS
UNION	UNION	UNION	URSULA	URSULA	SANTOS	UNION
VICTOR	VICTOR	VICTOR	VENEZUELA	VENEZUELA	TERESA	VICTOR
WILLIAM	WILLIAM	WILLIAM	WASHINGTON	WASHINGTON	URANO	WASHINGTON
X-RAY	X-RAY	X-RAY	EQUIS	EQUIS	VI TOLIA	XENIA
YOUNG	YOUNG	YOUNG	YOLANDA	YOLANDA	WASHINGTON	YATE
ZERO	ZEBRA	ZERO	ZAPATERIA	ZAPATERIA	ECIS	ZULMA
					YACAY	
					ZORRO	

VENEZUELA

INTERNATIONAL

Internat. Com. Circuits	Domestic Com. Circuits	ITU 1927	ITU 1932-1947	ITU 1932-1947	ITU 1932-1947
ALFRED	ANTONIO	AMSTERDAM	AMSTERDAM	AMSTERDAM	AMSTERDAM
BENJAMIN	BOLIVAR	BALTIMORE	BALTIMORE	BALTIMORE	BALTIMORE
OLD KINGS	CARLOS	CANADA	CANADA	CANADA	CANADA
EDWARD	DOMINGO	DENMARK	DENMARK	DENMARK	DENMARK
FRANK	ERNESTO	EDDISTON	EDDISTON	EDDISTON	EDDISTON
GEORGE	FRANCISCO	FRANCISCO	FRANCISCO	FRANCISCO	FRANCISCO
HARRY	GUILLELMO	GIBRALTAR	GIBRALTAR	GIBRALTAR	GIBRALTAR
ISAAC	HOMBRE	HANOVRE	HANOVRE	HANOVRE	HANOVRE
JACK	IGNACIO	ITALIE	ITALIE	ITALIE	ITALIE
KING	JOSE	JERUSALEM	JERUSALEM	JERUSALEM	JERUSALEM
LONDON	KILO	KIMBERLEY	KIMBERLEY	KIMBERLEY	KIMBERLEY
MARY	LILO	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL
NEILLIE	MANUEL	MADAGASCAR	MADAGASCAR	MADAGASCAR	MADAGASCAR
OLIVER	NICOLAS	NEUCHÂTEL	NEUCHÂTEL	NEUCHÂTEL	NEUCHÂTEL
PETER	OSCAR	ONTARIO	ONTARIO	ONTARIO	ONTARIO
QUEEN	PEDRO	PORTUGAL	PORTUGAL	PORTUGAL	PORTUGAL
ROBERT	QUITO	QUEBEC	QUEBEC	QUEBEC	QUEBEC
SAMUEL	RAMON	RYGGA	RYGGA	RYGGA	RYGGA
TONY	SANTIAGO	SANTO	SANTO	SANTO	SANTO
UNCLE	TOMAS	TOKI	TOKI	TOKI	TOKI
VICTOR	URSULA	URUGUAY	URUGUAY	URUGUAY	URUGUAY
WILLIAM	VICTOR	VICTORIA	VICTORIA	VICTORIA	VICTORIA
X-RAY	WASHINGTON	WASHINGTON	WASHINGTON	WASHINGTON	WASHINGTON
YELLOW	XAVIER	XANTIPPE	XANTIPPE	XANTIPPE	XANTIPPE
ZEPHRA	YOLANDA	YOKOHAMA	YOKOHAMA	YOKOHAMA	YOKOHAMA
	ZULIA	ZOULOU	ZOULOU	ZOULOU	ZOULOU

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NO-UK	ICAO	1947	Spanish	Caribbean Region	ATT Overseas	ALATO
ABEL	AMM	AMSTERDAM	ALFA	ALFRED	ALFRED	
ABER	BRAZIL	BALTIMORE	BETA	BENJAMIN	BAKER	BETA
CHARLIE	COCO	CASABLANCA	COCA	CHARLIE	CAST	CHARLIE
DAVE	DABO	DANEMARK	DELTA	DAVID	DAVE	DAVE
EASY	EDSO	EDISON	ECHO	EDWARD	EASY	EASY
FOY	FILSTA	FLORIDA	FONTRON	FRANK	FOY	FOY
GEORGE	GATO	GALLIPOLI	GOLF	GEORGE	GEORGE	GEORGE
HOW	HOMBRE	HABANA	HOTEL	HARRY	HYPD	HARRY
INDIA	INDIA	INDIA	INDIA	ISAAC	INDIA	INDIA
JTC	JULIO	JERUSALEM	JULIO	JACK	JIG	JACK
KING	KILO	KILO	KING	KING	KING	KING
LOVE	LUFFS	LUFFS	LOVE	LORDAN	LOVE	LOVE
MINE	MAMA	MAMA	MINE	MARY	MINE	MARY
HAN. MICHEL	NORMA	NORMA	MICHEL	HELI TE	REGAT	MICHEL
OSGAT	OPERA	OPERA	OSGAT	OLIVER	OPTIM	OSGAT
PARL	PERU	PARL	PARL	PETER	PRLP	PARL
QUEBEC	QUEBEC	QUEBEC	QUEBEC	QUEBEC	QUEBEC	QUEBEC
ROSA	ROSA	ROSA	ROSA	ROBERT	ROSEN	ROSA
SANTA	SANTA	SANTA	SANTA	SAMUEL	SALL	SANTA
SUGAR	TOMAS	TOMAS	TOMAS	THOMY	TAMM	SUGAR
TANK	UNCLE	UNCLE	UNCLE	UNCLE	UNITE	TANK
VECLA	VICTOR	VALEN	VICTOR	VICTORY	VICTOR	VECLA
VICTOR	VICTORY	WASHTON	VICTOR	VICTOR	VICTOR	VICTOR
WILLIAM	WILLIS	WILLIS	WILLIAM	WILLIAM	WILLIAM	WILLIAM
X-RAY	FLANDA	YON	YON	HILDA	YON	X-RAY
YON	ZETA	ZUR	ZETA	ZETA	ZETA	YON

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HISTORICAL

NY 201 1954

Old Irish

PAIN-TREE
BEECH
HAZEL
OAK
ASPEN
ALDER
IVY
WHITETHORN
FEN
ST. ASH
VINE
ASH
BROOM
DWARF-ELDER
WILLOW
FURZE
HEATH

ALM
BFIW
CILL
JAIR
BADHA
FEARAN
GORT
HUATH
IOCHA
LUTS
MFIN
NUIN
OIR
PEITH
RUTS
MIL
TEINE
UR

Old Lat.

AURIS
BARBA
CAPUT
DENTES
EPAR
FRONTIEM
GUTUR
HUMEROS
ILIA
LINGUAM
MANU
NASUM
OCULOS
PALATUM
QUINQUE DIGITOS
RENES
SUPERCILIA
TEMPORA
VENTREM

UR

ANLE
B. AVO
CHARLES
DORA
EDDY
FOOTROT
GOLF
HOTEL
INDIA
JIG
KHAKI
LIMA
MICK
NAN
OMNI
PAPA
QUEBEC
ROMEO
SIERRA
TANGO
UNCLE
VICTOR
WHISKEY
X-RAY
YANKEE
ZEBRA

UR

AVO
B. AVO
CHARLES
DORA
EDDY
FOOTROT
GOLF
HOTEL
INDIA
JIG
KHAKI
LIMA
MICK
NAN
OMNI
PAPA
QUEEN
RUBY
SOLO
TANGO
ULTRA
VICTOR
WHISKEY
X-RAY
YANKEE
ZEBRA

AVO
B. AVO
CHARLES
DORA
EDDY
FOOTROT
GOLF
HOTEL
INDIA
JIG
KHAKI
LIMA
MICK
NAN
OMNI
PAPA
QUEBEC
ROTOR
SIERRA
TAXI
ULTRA
VICTOR
WHISKEY
X-RAY
YANKEE
ZEBRA

AVO
B. AVO
CHARLES
DORA
EDDY
FOOTROT
GOLF
HOTEL
INDIA
JIG
KHAKI
LIMA
MICK
NAN
OMNI
PAPA
QUEBEC
ROTOR
SIERRA
TAXI
ULTRA
VICTOR
WHISKEY
X-RAY
YANKEE
ZEBRA

US	US	Air Traffic Control	Pilot's	Rivers	NDSC Preliminary	ND
ALFA	ALFA	ALFA	ADA	AMAZON	ABLAZE	ABRACADABRA
BRAVO	BRAVO	BETA	BERTHA	BERESINA	BUGLE	BACON
CHARLIE	CHARLIE	CHARLIE	CORA	CHARLES	CRAYON	CRAYON
DOCTOR	DELTA	DELTA	DIANE	DANBY	DINETTE	DIANE
EDITION	ECHO	EDWARD	ELAINE	ELISE	EARDORUM	EARDORUM
FOOTBALL	FOXTROT	FOXTROT	FIFI	FORTH	FLARE	FLARE
GALLANT	GOLF	GOLF	GABRIELLE	GARGES	GOLDS	GOLDS
HOTEL	HOTEL	HAVANA	HELEN	HELDON	HOW	HOW
INDICO	INDIA	ITALY	IRENE	IRVING	BOECOLI	BOECOLI
JUPITER	JULIETT	JUPITER	JOYCE	JAMES	JOY	JOY
KORAK	KILO	KILO	KATIE	KAMA	KATONIA	KATONIA
LITTEK	LIMA	LITTEK	LORRAINE	LOUISE	LORRAINE	LORRAINE
MARCO	MIKE	MARCO	MABEL	MARCO	MARCO	MARCO
MOBILE	NOVEMBER	NOVEMBER	NAVAL	NAVAL	NAVAL	NAVAL
OPERA	OLONE	OLONE	ROSE	ROSE	ROSE	ROSE
PING-PONG	PAPA	PAPA	PAT	PAT	PAT	PAT
QUACK	QUEBEC	QUEBEC	QUEBEC	QUEBEC	QUEBEC	QUEBEC
RHINO	ROME	R	ROBERT	ROBERT	ROBERT	ROBERT
SOLO	SEKRA	SA	SANDRA	SANDRA	SANDRA	SANDRA
TRUMPET	TANGO	T	TERESA	TERESA	TERESA	TERESA
UNIFORM	UNIFORM	U	UNA	UNA	UNA	UNA
VISIT	VAMPIRE	V	V	V	V	V
WINDY	WHISKEY	W	WENDY	WENDY	WENDY	WENDY
YACHT	YRAY	Y	Y	Y	Y	Y
ZEPPELIN	ZULU	Z	ZEPPELIN	ZEPPELIN	ZEPPELIN	ZEPPELIN

ALPHABETICALLY

Word	Response	USA	UK-USA	US British	UK
ALTERNATE	London (LCC)	USA	UK-USA	US British	UK
APPLES	ACK (AD)	AFFIRM	AFFIRM	APPLES	ALFA
BAKER	BAKER	BAKER	BAKER	BAKER	BRIV
CHARLIE	CHARLIE	CAST	CHARLIE	CHARLIE	COCC
DOG	DOG	DOG	DOG	DOG	DELT
EASY ERASE	EASY	EASY	EASY	EASY	EGHC
FREDDIE	FREDDIE	FD	FRED	FREDDIE	FOLE
GEORGE	GEORGE	GEORGE	GEORGE	GEORGE	GOLE
HYPO HEADLINE	HARRY	HYPH	HYPH	HYPO	HOTE
ISAAC	ISAAC	INTERRO	INTERRO	ISAAC	ITTE
JOHN	JIG	JIG	JIG	JOHN	JY
KING	KING	KING	KING	KING	KIL
LAQUID LOVE	LOVE	LOVE	LOVE	LOVE	LIMA
MIKE MAREGG	MONKEY	MIKE	MIKE	MONKEY	METRO
NILSON NICKEL	NIT	NEGATE	NEGATE	NILSON	NOTA
ORANGE	ORANGE	OPTIM	OPTIM	ORANGE	OR
PETE	PETE	PREP	PREP	PETE	PRE
QUEEN	QUEEN	QUEEN	QUEEN	QUEEN	QUE
ROBUST	ROGER	ROGER	ROGER	ROBUST	RIG
SAM	SUGAR	SAIL	SAIL	SAM	SOP
TOMMY	TOMMY	TARE	TARE	TOMMY	TOM
UNIT	UNIT	UNIT	UNIT	UNIT	UNI
VICTOR	VICTOR	VICTOR	VICTOR	VICTOR	VIC
WILLIAM	WILLIAM	WILLIAM	WILLIAM	WILLIAM	WIL
X-RAY	X-RAY	X-RAY	X-RAY	X-RAY	X-R
YORK	YORK	YORK	YORK	YORK	YOR
ZEBRA	ZEBRA	ZED	ZED	ZEBRA	ZEB

EXPERIMENTAL

Ball Test of M J	APRL Word List For Accurate Transmissions	Humorous	
ALICE	ABLE	A for HORSES	ALBERT
BERTHA	BOY	B for MUTTON	BENNIE
CHARLES	CAST	C for YOURSELF	CHARLIE
DAVID	DOG	D for DUMB	DAVE
EDWARD	EASY	E for PUPPY YOU'VE BEEN	EDDIE
FRANK	FOX	F for VESPER	
GEORGE	GEORGE	G for PUPPY	
HENRY	HAVE	H for HIMSELF	
IDA	ITEM	I for GOT	
JACK	JIG	J for SEE A DREAM WALKING	
KATE	KING	K for ANNE	
LILLY	LOVE	L for BE	
MARY	MAY	M for ME	
MARIE	MAN	N for MADMAN	
OTTO	OBOW	O for GOODNESS	
PETER	PUP	P for PEPPER PICKED A PEPPER	
QUAKER	QUACK	Q for BILLIARDS	
ROBERT	ROOF	R for RICE	
ROSE	ROSE	S for SPOKE	
THOMAS	TARE	T for TING	
UTAH	UNIT	U for ME	
VICTOR	VICTOR	V for LA FRONTE	
WILLIAM	WILLIAM	W for WASHINGTON	
XEROX	XEROX	X for BRACKEN	
YESSA	YESSA	Y for THE LITTLE MAN	
ZEDDA	ZEDDA	Z for ZEPHYRUS	

LIST OF ABBREVIATIONS

APCO - ASSOCIATED POLICE COMMUNICATION OFFICERS
AAR - AMERICAN ASSOCIATION OF RAILROADS
ARRL - AMERICAN RADIO RELAY LEAGUE
ATT - AMERICAN TELEPHONE AND TELEGRAPH COMPANY
CAN. - CANADIAN
CO. - COMPANY
COM. - COMMUNICATION, COMMERCIAL, COMMISSION
COS. - COMPANIES
DICT. - DICTIONARY
GEN. SER. - GENERAL SERVICE SCHOOLS PRESS, FORT LEAVENWORTH,
KANSAS
GOVT. - GOVERNMENT
IATA - INTERNATIONAL AIR TRANSPORT ASSOCIATION
ICAO - INTERNATIONAL CIVIL AVIATION ORGANIZATION
INTERNAT. - INTERNATIONAL
ITU - INTERNATIONAL TELECOMMUNICATIONS UNION
MOD. - MODIFICATION
NDRC - NATIONAL DEFENSE RESEARCH COMMITTEE
ORG. - ORGANIZATION
PACIP. - PACIFIC
POST - POST OFFICE
PTT - POSTAL, TELEPHONE and TELEGRAPH
PT. TT - POST AND TELEGRAPH
RCA - RADIO CORPORATION OF AMERICA

RR	- RAILROAD
R/T	- RADIOTELEPHONE
SER.	- SERVICE
TEL.	- TELEPHONE
TELECOM.	- TELECOMMUNICATION
TELEG.	- TELEGRAPH
W. U.	- WESTERN UNION

B. COMPOSITE LISTING OF DEPARTMENTS

Glossary of Word Frequency

* Word tested by the Psycholinguistics Laboratory The Ohio State University Research Foundation.

** Word tested by United Kingdom.

*** Word tested by National Defense Research Committee, Harvard University.

A for HORSES	1	ALBANY	2	AS	1
AASE	1	ALBERT	8	ASH	1
(AASE)	1	ALBERTO	1	ASTA	1
ABANG	1	ALBRECHT	1	ASTI	2
ABEL	3	ALFA	21	AVILA	1
ABLAZE	2	ALFRED	9	AXEL	1
ABLE	11	ALFREDO	1	AYRAS	1
ABRIDGE***		ALICE	2		
AC	1	ALICIA	5	B	
ACK	5	ALMA*		B for Mutton	1
ACTOR	1	ALPHA	1	LACK	1
ADA	1	AMAZON	1	BAKER	19
ADAM	9	AMIEIS	1	BALA	1
ADAMS	6	AMSTERDAM	8	BALIN'	1
ADAN	1	ANA	6	BALTIMORE	8
ADREN	1	ANATILE	9	BAK	2
ADUR	1	ANCOVA	1	BARCELO	1
ADWIS	1	ANDRE	1	BARCELONA	1
ADWIS	3	ANDREW	5	BARI	3
ADWIS	1	ANDRIES	1	BALTIMORE	1
AFFIRM	3	ANNA	16	BARTOLO	1
AFFIRMATIVE	3	ANNA ANNA	1	BARU	1
AFTER	1	ANNA-EMIL	1	BASEBALL*	
AFTER	4	ANTON	9	BASTIA	1
AFRICA	1	ANTONIO	2	BATTISTA	2
AFTER	1	APACE	1	BATTIN	1
AGE***		APATIN	1	BEATRIZ	6
AGOT	1	APPLE	2	BEC	1
AGRA	1	APPLES	2	BEESTRAAT*	
AQUA	2	APRON***		BEER	6
AIDA	1	ARMILLA	1	BEHOLD***	
ARCOLO	1	ARMIC*		BEER	1
ARE	4	ARLU	3	BEYAKIN	19
ARET	1	ARND	1	BEER	1
ARE	2	ARND	10		

DOMINGO 2
 DOMINGOS 1
 DOMINO 1
 DOMODOSSOLA 2
 DON 5
 DORA 11
 DOROTEA 4
 DOROTHEA 1
 DORTE 2
 DRAGON*** 1
 DUBLIN 1
 DUBROVNIK 1
 DUCK 1
 DUFF 1
 DUMBIER 1
 DUR 1
 DURBAN 1

E

E for PUTS YOU
 TO SLEEP 1

EAGLE 2
 EABDRUM 2
 EASY 21
 ECCO 2
 ECHALLENS 1
 ECHO 11
 ECO 3
 EDDIE 2
 EDDISTON 2
 EDDY 1
 EDISON 6
 EDITH 1
 EDITOR 1
 EDOUARD 3
 EDUARD 3
 EDUARDO 2
 EDWARD 42
 EGG 1
 EINAR 1
 EKO 1
 EKOR 1
 ELAINE 1
 ELBE 1
 ELEFANTE 1
 ELEKTRIKA 1
 KLEMER 1
 ELENA 1
 ELICORA 1

ELMO 1
 ELOY 2
 ELSA 3
 EMEL 4
 EMIL 13
 EMILE 9
 EMMA 2
 EMENTHAL 1
 EMPOLI 3
 ENGLAND 4
 ENRIQUE 1
 EPIC 1
 EPINAL 1
 ERASE 1
 ERBA 1
 ERCEGNOVI 1
 ERIK 4
 ERKCI 1
 ERNEST 2
 ERNESTO 6
 EROR 1
 ESEL 1
 ESPAÑA 2
 ESSO* 1
 ESTACA 1
 ESTER 1
 ESTHER 2
 ETE 1
 ETHA 2
 EUGENE 5
 EVA 9
 EYEBALL***
 EYESIGHT***

F

F for VESECE 1
 EFPE 1
 F 1
 FACE 1
 FACIL 1
 FAHAM 1
 FAIDO 1
 FALAISE 1
 FAMILI 2
 FARIDABAD 1
 FEDERICO 2
 FELIFE 1
 FESO 3
 FER 1

FERDINAND 3
 FERENC 1
 FIESTA 2
 FIPI 1
 FIGARO 1
 FILIEUSTIERO 1
 FILIP 2
 FINAL* 1
 FINNUR 1
 FIRENZE 1
 FISHER 1
 FLARE 1
 FLORA 1
 FLORIDA 1
 FLOWER 1
 FOCO 1
 FOGGLI 1
 FOLIO 1
 FOOTBALL 1
 FOPLI 1
 FORTH 1
 FORTUNE 1
 FOX 24
 FOXTROT 14
 FRANÇATS 1
 FRANCE 3
 FRANCESE 1
 FRANCIÀ 4
 FRANCISCA 4
 FRANCISCO 7
 FRANCK 1
 FRANÇOIS 14
 FRANÇOZ 2
 FRANK 24
 FRANS 2
 FRANTISEK 1
 FRED 2
 FREDDIE 9
 FREDDY 1
 FREDERIC 2
 FREDERICK 6
 FREDERIK 4
 FREDRIK 4
 FRENCH 1
 FRIEDA 1
 FRIEDRICH 6
 FRITZ 6
 FRITZE 1
 FUEGO 1
 FUSIL 1

G

G for POLICE	1	GRETE	2	HIPPOLYT	1
GABOR	1	GUERRA	1	ECLANDA	1
GABRIEL	1	GUILLEMINA	3	HOMERE	10
GABRIELLE	1	GUILHERMO	2	HOOGHLY	1
GAGO	2	GURRAR	3	HORA	1
GALA	2	GURUNG	1	HORACIO	1
GALIPOLI	1	GUSTAAF	4	HORSE	1
GALLANT	1	GUSTAV	17	HOSPENTHAL	1
GALLIFOLI	5	GUSTAVE	6	HOTEL	27
GAMAT	1	GUSTAVO	2	HOW	9
GAMMA	4	GWALIOR	1	HRASTNIK	1
GANGES	1	H		HRVATSKA	1
GANGWAY	1	H for HIMSELF	1	HUDSON	1
GASTON	9	ACCA	3	HUELVA	1
GATO	6	H	1	HYPO	9
GAVIA	1	HABANA	2		
GAZ	1	HABIS	1	I for GOT	1
GENERAL	1	HACHE	6	I	1
GENOA	1	HAIE	1	IEU	1
GENOVA	2	HALLIARD	1	ICE	1
GENOVEVA	1	HALLO-BURRAH	1	ICECOLD	1
GEORG	1	HAMILTON	2	ICHANG	1
GEORGE	65	HAMSTERDAM	1	ICI	1
GEORGES	1	HANNES	1	IDA	30
GERARD	3	HANOVRE	2	IDEAL	1
GERARDO	1	HANS	3	IGNACIO	1
GERMANY	1	HARALD	3	IIVO	1
GERT	1	HARBIN	1	ILONA	1
GERTRUDE	1	HARD***		IMOLA	4
GERTRUDES	1	HARDY	1	IMOTSKI	1
GERZALTAR	2	HARRY	23	IMPI*	
GIG	1	HAUTEMONTE	1	INDE	1
GIORGIO	1	HAVANA	8	INDEX***	
GIOVANNI	2	HAVE	5	INDIA	23
GIRL***		HEADLINE	1	INDIAN*	
GLASGOW	2	HECTOR	2	INDIGO	1
GLORO	1	HEDVIG	3	INDIO	4
GLORIOSO	1	HEIKKI	1	INDONE	1
GLORY	1	HEINRICH	6	INES	10
GOGO	1	HEINZ	3	INEZ	2
GOLDEN	2	HELEN	1	INGA	1
GOLF	15	HELENA	1	INGI	1
GOLFO	1	ELIAS	1	INIMITABLE	1
GOLLYK	1	HEINRICK	1	INK	6
GOSPIC	1	HEINRIK	8	INSECT	1
GOTTARD	1	HEINI	16	INT	1
GRANNA	1	HEINIK	1	INTS	1
GRANZA	1	HEINIGERIA	1	INTER	2
GRANNY	1	HEINI	18	INTERGLACE	1

INTERN***
 INTERROGATORY 7
 INTRA*
 IRAQ 1
 IRELAND 1
 IRENE 1
 IRMA 5
 IRRAWADDY 1
 ISAAC 23
 ISABEL 1
 ISAK 1
 ISIDOR 4
 ISIDOR 1
 ISIDORE 10
 ISIDORO 2
 ISLAND 1
 ISTRES 1
 ITALIA 9
 ITALIE 2
 ITALY 4
 ITEM 11
 IVAN 2
 IVAR 4
 IZAAK 2
 (LANSUIT*) 2

 J

 J for SEE A
 DREAM WALKING 1
 ILUNGO 2
 IOTA 1
 JACK 14
 JACOB 2
 JANE*
 JANE 1
 JAIPUR 1
 JAUCE 1
 JAKE 1
 JAKOB 5
 JAMAICA 2
 JAMES 7
 JAMAIQUE 1
 JAN 2
 JANG 1
 JANE 1
 JANE 1
 JAPAN 5
 JARRO 3
 JANVILLE 1

JAVA 2
 JEAN 1
 JEANNE 1
 JEHOL 1
 JERSEY 2
 JERUSALEM 7
 JERUSALEM 1
 JESENICE 1
 JESI 2
 JESUS 1
 JEV 1
 JIG 24
 JOAQUIN 1
 JOCKEY 1
 JOHAN 5
 JOHANNES 1
 JOHN 12
 JOHNNIE 4
 JOHNNY 1
 JOIA 1
 JONAS 1
 JORGE 1
 JOSE 3
 JOSEF 1
 JOSEFA 1
 JOSEPH 14
 JOT 4
 JOTA 5
 JOY 1
 JOYCE 1
 JOYFUL 2
 JOZEF 4
 JUBILEE 1
 JUDAH***
 JUHO 1
 JULIA 4
 JULIER 1
 JULIETT 9
 JULIETTA 2
 JULIETTE 3
 JULIO 4
 JULIUS 3
 JUNO 2
 JUPTER 3

 K

 K for ANCES 1
 KAPPA 3
 K 1

KAGADO 1
 KAISER 2
 KAKI 3
 KALLE 4
 KAMA 1
 KAMAR 1
 KAMNIK 1
 KAPPA 2
 KAREL 5
 KAREN 2
 KARIN 1
 KARL 2
 KARGLY 1
 KALEMIR 1
 KATE 7
 KATIE 1
 KAUFMANN 1
 KEHL 1
 KENYA 1
 KEPLS 1
 KEPLER 2
 KEPLERO 1
 KETTY 1
 KEYHOLE 1
 KHAKI 1
 KILIO 1
 KILO 38
 KILOGRAM 5
 KILOGRAMME 11
 KILOGRAMO 3
 KIMBERLEY 2
 KING 52
 KINGDOM 1
 KINGSTON 2
 KIRSTEN 2
 KITTY 3
 KLASER 10
 KNAPSACK 1
 KNICKRACK 2
 KODAK 1
 KODAK 1
 KONRAD 2
 KOREA 1
 KOTOR 1
 KRISTEJAN 1
 KURFORST 4
 KURSAAL 1
 KURT 1