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THE PRODUCTION OF THE AGARD MULTILINGUAL AERONAUTICAL DICTIONAR--ETC(U)
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ADVISORY GROUP FOR AEROSPACE RESEARCH & DEVELOPMENT

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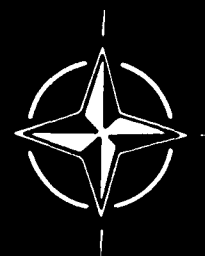
AGARD REPORT No. 684

JUN 29 1981

The Production of The AGARD Multilingual Aeronautical Dictionary Using Computer Techniques

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(ORGANISATION DU TRAITE DE L'ATLANTIQUE NORD)

AGARD Report No.684

THE PRODUCTION OF THE AGARD MULTILINGUAL AERONAUTICAL
DICTIONARY USING COMPUTER TECHNIQUES,

by

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This report was prepared at the request of the Technical Information Panel of AGARD.

THE MISSION OF AGARD

The mission of AGARD is to bring together the leading personalities of the NATO nations in the fields of science and technology relating to aerospace for the following purposes:

- Exchanging of scientific and technical information;
- Continuously stimulating advances in the aerospace sciences relevant to strengthening the common defence posture;
- Improving the co-operation among member nations in aerospace research and development;
- Providing scientific and technical advice and assistance to the North Atlantic Military Committee in the field of aerospace research and development;
- Rendering scientific and technical assistance, as requested, to other NATO bodies and to member nations in connection with research and development problems in the aerospace field;
- Providing assistance to member nations for the purpose of increasing their scientific and technical potential;
- Recommending effective ways for the member nations to use their research and development capabilities for the common benefit of the NATO community.

The highest authority within AGARD is the National Delegates Board consisting of officially appointed senior representatives from each member nation. The mission of AGARD is carried out through the Panels which are composed of experts appointed by the National Delegates, the Consultant and Exchange Programme and the Aerospace Applications Studies Programme. The results of AGARD work are reported to the member nations and the NATO Authorities through the AGARD series of publications of which this is one.

Participation in AGARD activities is by invitation only and is normally limited to citizens of the NATO nations.

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THE PRODUCTION OF THE AGARD MULTILINGUAL AERONAUTICAL DICTIONARY

1. INTRODUCTION

In 1973, the National Aeronautics and Space Administration was asked by the Advisory Group for Aerospace Research and Development, Technical Information Panel (AGARD/TIP) to assist in preparing an updated version of the Aeronautical Multilingual Dictionary, published by AGARD's Documentation Committee in 1960 and supplemented in 1963. In October 1973, under auspices of AGARD/TIP, the Working Group for the Multilingual Aeronautical Dictionary held its first meeting and began the deliberations that led seven years later to distribution of printed dictionary copies to AGARD National Delegates, to Panel Representatives, and to two points for public sale. In North America, sale is by the National Technical Information Service, Springfield, Virginia, USA, and in other parts of the world by AGARD/NATO, Neuilly sur Seine, France.

The principal goal of the work was stated in a preface to the dictionary by the Chairman of AGARD, Dr. Alan M. Lovelace:

Since 1963, substantial technological advances have taken place, and many new terms have been introduced into the language of aeronautical research, development, and engineering. At the same time, many terms previously in current use are obsolescent. For these reasons, the original AGARD Multilingual Aeronautical Dictionary has been completely revised and updated. In his foreword to the first AGARD Multilingual Aeronautical Dictionary, the late Dr. Theodore von Karman, world-renowned scientist and founder of AGARD, said, "I believe that one of the fundamental conditions for the exchange of scientific information is the exact definition of scientific and technical concepts and a knowledge of the corresponding terminology in various languages." It is AGARD'S hope that this revised dictionary will help fulfil this objective and will prove a valuable tool for scientists, engineers, and translators in the field of aeronautics.

A second major goal was to produce the dictionary by computer techniques and automatic photocomposition insofar as possible. Computer assistance in the publication process of the dictionary was to be employed to minimize the cost and facilitate a recurring process of

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maintaining currency with the leading edge of technology. Dictionaries have been developed with the use of computers before, however, one dealing with a multiplicity of languages has not been accomplished in a fully automated manner before.

In realizing these goals the Working Group relied on AGARD Panel members for the primary input in updating terms and definitions, while two Technical Information Panel Executives during the six-year period, A. J. R. Whitehead and Trevor Sharp, provided the coordination and funding activities necessary to support the various contractors involved. Further planning and coordination was provided by two chairmen of the Working Group, Colin Schuler at the outset, and Joseph Coyne later when it became known as the Sub-Committee on the Multilingual Aeronautical Dictionary. The efforts of the contractors will be described in detail later in this report, but considerable attention to the data processing and photocomposition aspects of the work was required by two successive directors of NASA's scientific and technical information program during this period, Harold E. Pryor and George P. Chandler, Jr.

The exposure described herein of both AGARD and NASA to the development of MAD and the experience gained in its actual production should provide a sound basis for the production of the next edition. This version is expected to contain more terms and will be published within a time cycle considerably shorter than the 1980 edition. Providing at the outset for support by a single organization having knowledge in three key areas--lexicography, language translations, and technical editing,--should produce a synergistic effect when combined with the computerized process now developed and described in the following pages.

2. OBJECTIVES AND CONTENT OF THE DICTIONARY

2.1 BACKGROUND

In March 1953 AGARD commissioned its Documentation Committee to initiate the development of a multilingual technical aeronautical dictionary. The Multilingual Aeronautical Dictionary was published in 1960, and a Supplement followed in 1963. In keeping with its mission for the advancement of aerospace science and technology and the exchange of information in these fields among NATO members, the Technical Information Panel of the Working Group on the Multilingual Aeronautical Dictionary (MAD) was formed to revise the dictionary to include new terms and to delete terms that had become obsolete.

In a cooperative spirit, a joint effort was instituted in 1974 between the Working Group on the Multilingual Aeronautical Dictionary and the U.S. National Aeronautics and Space Administration, Scientific and Technical Information Office. While AGARD was to remain

responsible for the substance and content, NASA was to supply state-of-the-art technology for the preparation of the preliminary versions and the final camera-ready copy. At the outset, it was agreed that the AGARD MAD was to be considered a recurring publication; computer technology would be used for data maintenance and update, and computer-assisted photocomposition for cost containment of subsequent editions of the dictionary.

2.2 PRODUCTION TECHNIQUE

Computer technology served three purposes in the composition of the MAD: (1) It allowed for the implementation of a coordinated management plan to facilitate the selection of terms and definitions and the control of translations. (2) Given sensitive, far-sighted programming, it allowed the dictionary's editorial staff to easily update, add, or delete text up to the last possible moment. (3) It allowed formatting and photocomposition to be accomplished within the time constraints imposed. In addition, a major advantage of the use of computer technology is the fact that a very large data base now exists in machine-readable form on which to base subsequent publications and on which other information science activities can be founded.

2.3 OBJECTIVE OF THE DICTIONARY

The general objectives set for the MAD were:

o Use of Automatic Data Processing Techniques

The development of a computer system to support all the processing required in the production of the dictionary was to be accomplished using as much off-the-shelf software and hardware as available to minimize costs. NASA's Scientific and Information Facility (STIF) supplied the hardware and software. The IBM 360/65 Operating System with appropriate peripheral equipment was used. The system included an on-line data entry capability with complete text editing facilities. A software system that included computer photocomposition for a phototypesetter at NASA STIF was employed as the nucleus of the special software needed to support the dictionary.

o Size

It was recognized at the outset that the MAD could not contain all the terms required to meet the satisfaction of all interested parties. The initial goal was 7500 items or entries for which English definitions would be supplied. Subsequent editions would contain corrections of any deficiencies in addition to new items.

o Scope

The MAD is divided into three major sections: (1) English language terms and definitions with translations in German, Spanish, French, Greek, Italian, Dutch, Portuguese, Russian, and Turkish; (2) indexes in all the non-English languages; and (3) a list of acronyms and abbreviations.

o Coverage

Twenty-three categories of terms were included in the initial term selection. The sources are shown in Figure 2-1. Participating NATO countries supplied the translations of the terms in their respective languages; Russian translations were done at NASA STIF by a professional technical translator. A synergistic effect was obtained through the use of multilingual editors and lexicographers.

2.4 CHRONOLOGY

The AGARD MAD effort began in the spring of 1974 and concluded in the fall of 1980. Activities during this period included standard publications procedures as well as the liaison activities necessary to deal with a committee distributed throughout the world. It was necessary to obtain agreement with respect to format and layout, scope and coverage, and content and substance. The methodology for interaction by the contributors had a significant impact on the amount of time required to attain the goals. The following is a synopsis of events that led to the production of the AGARD MAD:

Spring 1974	Systems analysis and functional design
Summer 1974	Test data tape received from Europe
Fall 1974	Software development and interfaces for first draft completed; production data tape received from Europe
Winter 1974	First draft AGARD MAD dispatched to required nations
Fall 1975	Selection of format and style by MAD Working Group; software development and interfaces for second draft completed
Winter 1975	Last corrections received for terms and definitions addendum data tape received from Europe
Spring 1976	Second draft AGARD MAD dispatched to required nations; magnetic tape of second draft AGARD MAD sent to Germany
Fall 1976	Production processing documentation guidelines published

<u>Code</u>	<u>Source</u>
001	BSI 185 British Standard Glossary of Aeronautical and Astronautical Terms 1969-1973
002	BSJ 4236 British Standard Glossary of Terms relating to Air Cushion Vehicles
003	BSI 661 British Standard Glossary of Terms relating to Acoustics
005	BSI 185 1964 (for Navigation terms)
010	AGARD Aeronautical Multilingual Dictionary/ 1960 and its First Supplement 1963.
011	Meteorological Office (U.K.)
015	AGARDograph No. 153. Glossary of Aerospace Medical Terms. 1971
020	AGARD Consultant (Melzig) (Parachutes)
030	European Organisation for Quality Control (EOQC) Glossary of terms used in Quality Control. 1972
035	Mathematical Dictionary, James & James
040	NASA CR 2576 Handbook of noise ratings. April, 1974
045	Chambers Technical Dictionary
050	NATO Glossary (AAP-6K)
051	Joint Services Glossary (UK) JSP 110 (1973)
052	Air Standards Co-ordinating Committee.
500	NASA Aeronautical Dictionary
501	AAP-6(M)
502	AGARD Panel Executives
503	AGARD Panel
504	U.S. Military
505	I.C.A.O.
506	Mil-Std
507	British Standard.

Figure 2-1 -- List of Sources and Codes

Summer 1977	Software development and interfaces for page proofs completed
Fall 1977	Last translations received
Winter 1977	Page proofs of definitions and translations dispatched to nations
Spring 1978	Last corrections received from nations for translations; analysis and resolution of anomalies and substantive errors started
Spring 1980	Final corrections for all aspects of AGARD MAD received
Summer 1980	Final Photocomposed camera-ready pages of AGARD MAD produced
Fall 1980	Printing and distribution of AGARD MAD

2.5 METHOD

The approach to the production of the AGARD MAD took into account the fact that the people involved were located all over the world. The active members of the Working Group (later the Sub-Committee) met many times in the United States and in Europe during the development of the book and were instrumental in its design and makeup. They reported regularly to the Technical Information Panel, which is composed of representatives from all the nations of NATO, and they established a liaison with technical representatives in the appropriate countries for concurrence in term selection and subsequent translation into French, Dutch, German, Greek, Italian, Portuguese, Turkish, and Spanish. The delegates from NATO countries relied on their national experts for consultation and translations.

At the outset of the project, a comprehensive study and functional design for computerized production was accomplished by the staff of NASA STIF. The study covered alternatives and tradeoffs and their costs with respect to the various facets of the MAD. The character set for the dictionary was defined, and the data entry requirements were analyzed. The character set contained all English alphabetic characters, accents, numerics, and punctuation, as well as the complete Greek and Cyrillic alphabets. Data entry was to be accomplished in two phases: The first set of data contained the English language terms and their definitions, categories, and subcategories; the second phase was the keyboarding of the non-English language translations including accents, Greek characters, and Cyrillic characters. Both uppercase and lowercase alphabet characters were accommodated. An analysis of proof and review requirements, alternative fonts, photocomposition resources available, hard copy preparation and distribution to reviewers, and mock-up page layouts were included in the initial study.

Using this analysis, the Working Group made major decisions that resulted in the following procedures:

- o Alpha-Numeric, Ltd., Great Britain, was selected to keyboard the initial set of English language terms and their definitions, categories, and subcategories and to prepare a computer magnetic tape of the data.
- o Software was developed at NASA STIF to convert the Alpha-Numeric data into a convenient format for subsequent processing, for example, generation of proof copy from a line printer, text entry and editing, and photocomposition. Figure 2-2 shows a sample of the first proof.
- o Full documentation and instructions were developed by NASA STIF personnel and distributed to all parties concerned.
- o Additional hardware and software were installed at NASA STIF to support the production of the AGARD MAD. This consisted of special sort routines, proof printout packages, character translations, page style and layout formats for photocomposition, and new fonts for the existing photocomposition device. The NASA Online and Input Photocomposition System (NOIPS), based on an IBM package called the Administrative and Terminal Sytem (ATS), was used for text editing. ATS supplies full text updating capability through IBM Selectric typewriter style terminals.
- o After an appropriate complement of terms was processed, proofs were distributed to members for selection of terms and inclusion of new terms. Figure 2-3 shows a sample of the proofs used by the translators.
- o NASA STIF personnel keyed in the remainder of the terms and prepared new proofs for translators. A data base on magnetic tape was transmitted to the German members, whose computer used an existing German/English thesaurus.
- o NASA STIF personnel prepared sample pages and corresponding cost data so that the Working Group could select the final layout and style of the AGARD MAD.

advection 1501	The process of transfer by horizontal motion in the atmosphere, e.g., the transfer of heat from low to high latitudes. ***** MAD1433 LINE # = 16 *****
advisory area 1302	A designated area where an air-traffic advisory service is available. ***** MAD1437 LINE # = 1 *****
advisory route 1302	A route along which an air-traffic advisory service is available. ***** MAD1437 LINE # = 7 *****
aerial recovery canopy 1201	A parachute canopy which is designed to provide the necessary structural and/or descent characteristics required for air snatch and subsequent payload retrieval operation. ***** MAD1346 LINE # = 13 *****
aerial target 0501	A target designed to be towed or flown in the air, and used in air-to-air and surface-to-air gunnery training. ***** MAD1001 LINE # = 12 *****
aero-engine 0802	An engine used to provide the main propulsive or lifting power for an aircraft. ***** MAD1584 LINE # = 19 *****
aero-isoclinic wing 0502	A wing designed to maintain the same angle of incidence when deformed under aerodynamic loads. ***** MAD1265 LINE # = 13 *****
aero-otitis media 1702	An acute inflammatory condition of the middle-ear initiated by a pressure imbalance across an intact tympanic membrane. Generally used as synonymous with otitic barotrauma. Also sometimes spelt aerotitis media. ***** MAD1831 LINE # = 1 *****
aeroarthrosis 1702	The formation of a perceptible but painless accumulation of gas within a joint space as a result of reduction of atmospheric pressure. ***** MAD1829 LINE # = 17 *****
aerobatics 0202	Manoeuvres intentionally performed with aircraft, other than those required for normal flight. ***** MAD1136 LINE # = 6 *****
aerobiology 1701	The study of the distribution of living organisms freely suspended in the atmosphere. ***** MAD1800 LINE # = 26 *****

Figure 2-2 -- First Proof Listing Page

10401 alleviation factor 0301 1176006	See gust alleviation factor.
10402 buckling 0301 1145021	A structural deformation due initially to instability under load, irrespective of whether the deformation is elastic or permanent or whether it leads at once to collapse or not.
10403 creep buckling 0301 1145028	Critical terminal buckling resulting from slow and steady increase in the deformation of a structure under a constant load.
10404 design load 0301 1020001	A specified load that a structural member or part should withstand without failing.
10405 dynamic load 0301 1024007	A load imposed by dynamic action due to the acceleration of an aircraft, as imposed by gusts, by manoeuvring, by landing, by firing aircraft armament, etc.
10406 elastic axis 0301 1028001	A line or axis in a structure or member, such as a wing, about which torsional deflection occurs when a torque is applied.
10407 elastic centre 0301 1028007	A point within a section of a structure or member, such as an aerofoil section, at which the application of a small load will cause transverse deflection but not torsional deflection, hence a point in a section about which torsional deflection occurs.
10408 factor of safety 0301 1146001	The factor by which a limit load is multiplied to produce the load to be used in the design of an aircraft or part of an aircraft. It is introduced to provide a margin of strength against loads greater than the limit loads, and against uncertainties in materials, construction, load estimation and stress analysis.
10409 fineness ratio 0301 1146022	The ratio of the length of a body to its maximum transverse dimension or, sometimes, to some equivalent dimension.
10410 flexural centre 0301 1176021	See shear centre.
10411 flight envelope 0301 1147001	A diagram in which, for a particular aircraft type, the specified design normal accelerations (as multiples of g) form the ordinates and the corresponding equivalent airspeeds the abscissae. The boundary of the diagram forms a closed figure which defines the design limits for the aircraft concerned for the specific flight altitude involved.
10412 full load 0301 1043022	The entire load sustained by an aircraft at rest or in a condition of unaccelerated flight the amount of this load, equivalent to the weight of the aircraft.

Figure 2-3 — Page Used for Translation

- o NASA STIF personnel developed the technique to keyboard non-English language translations with provisions for accents, Greek characters, and Cyrillic characters. Accents were accommodated with a special overstrike keying technique; Greek and Russian material was input with a special Selectric font ball by individuals trained in the languages. Figure 2-4 shows a page from a representative translation manuscript.
- o NASA STIF personnel prepared page proofs of the terms, definitions, and translation sections for review.
- o NASA STIF personnel keyed and prepared an abbreviations and acronyms section from sources submitted by the Working Group.
- o After comprehensive editorial and in-depth review, NASA STIF personnel prepared camera-ready copy.

A comprehensive Workflow PERT Chart, shown in Figure 2-5, was prepared as part of the requisite documentation of the AGARD MAD effort.

2.6 SECTIONS OF THE DICTIONARY

2.6.1 Definitions and Translations

The first part of the dictionary is an alphabetical list of English terms, their definitions in English, and translations into the nine other languages. The sort sequence of the items is in the standard library mode. The following fields are displayed:

- o Item number (in a one-up sequence starting with 10001)
- o English term
- o English definition (including multiple definitions, synonyms, and homonyms)
- o Translations (and their identification codes) in the following order:

DE	German
ES	Spanish
FR	French
HE	Greek (in Greek font)
IT	Italian
NE	Dutch
PO	Portuguese
RU	Russian (in Cyrillic font)
TU	Turkish

ENGLISH

Acceleration error
 Accelerations (aerospace
 medicine)
 Accelerator pump
 Accelerometer
 Acceptance inspection
 Acceptance number
 acceptance sampling
 acceptance sampling plan
 acceptance trials
 accessory gearbox
 accordion folding
 accuracy
 accuracy in the mean
 acoustic fatigue
 acoustic fatigue test
 acoustic liner
 acoustic spectrum
 acquisition
 action limits
 active guidance
 active redundancy

FRENCH

Erreur de faux nord
 Accélération
 Pompe de reprise
 Accéléromètre
 inspection acceptation
 nombre acceptation
 d'échantillons acceptation
 d'enchantillons plan acceptation
 d'essai acceptation
 accessoire carter engrenages
 pliante accordéon
 exactitude
 d'moyen exactitude
 fatigue acoustique
 l'essai fatigue acoustique
 ligner acoustique
 spectre acoustique
 acquisition
 limite action
 guidage l'active
 redondance l'active

Figure 2-4 — Translation Manuscript Page As Received

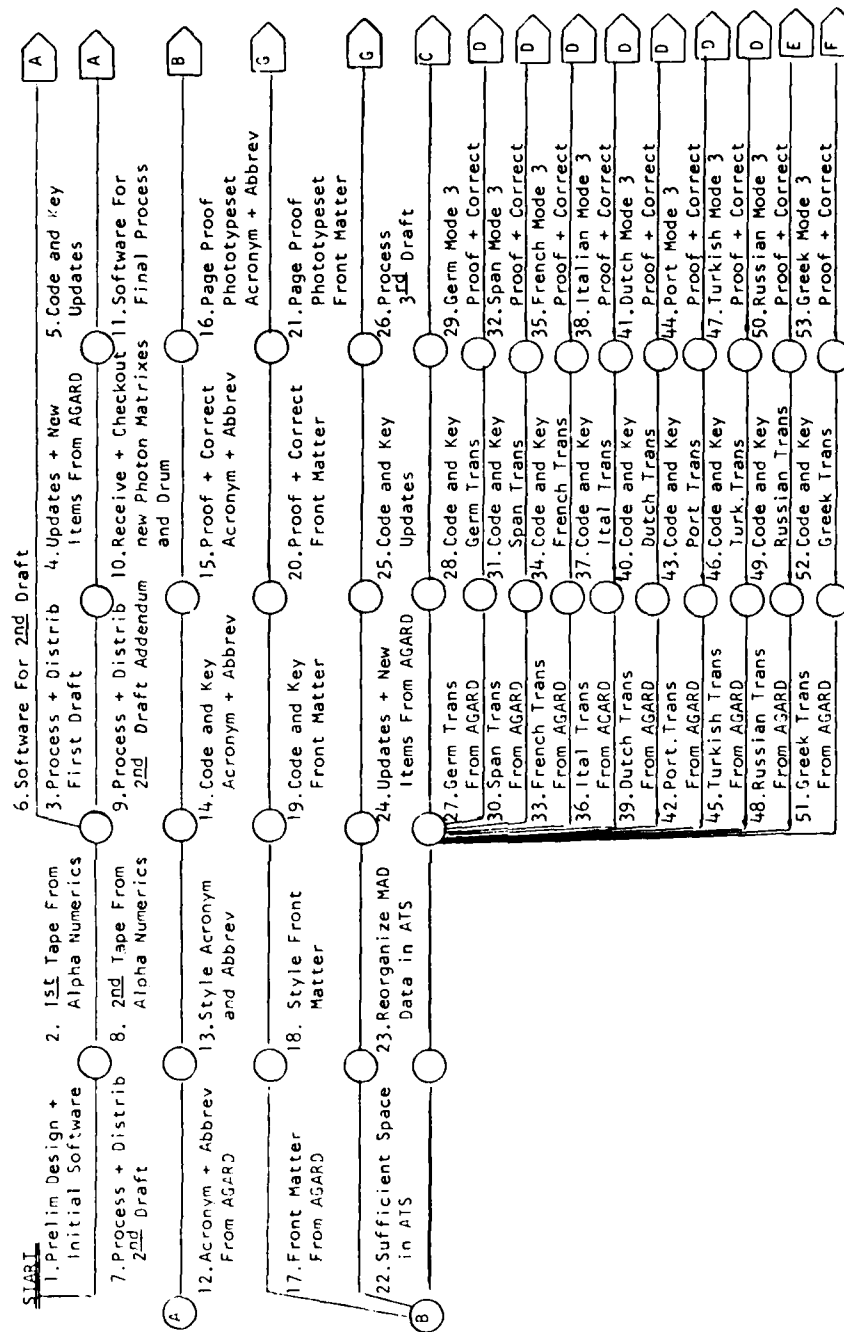


Figure 2-5 — AGARD MAD Workflow PERT Chart

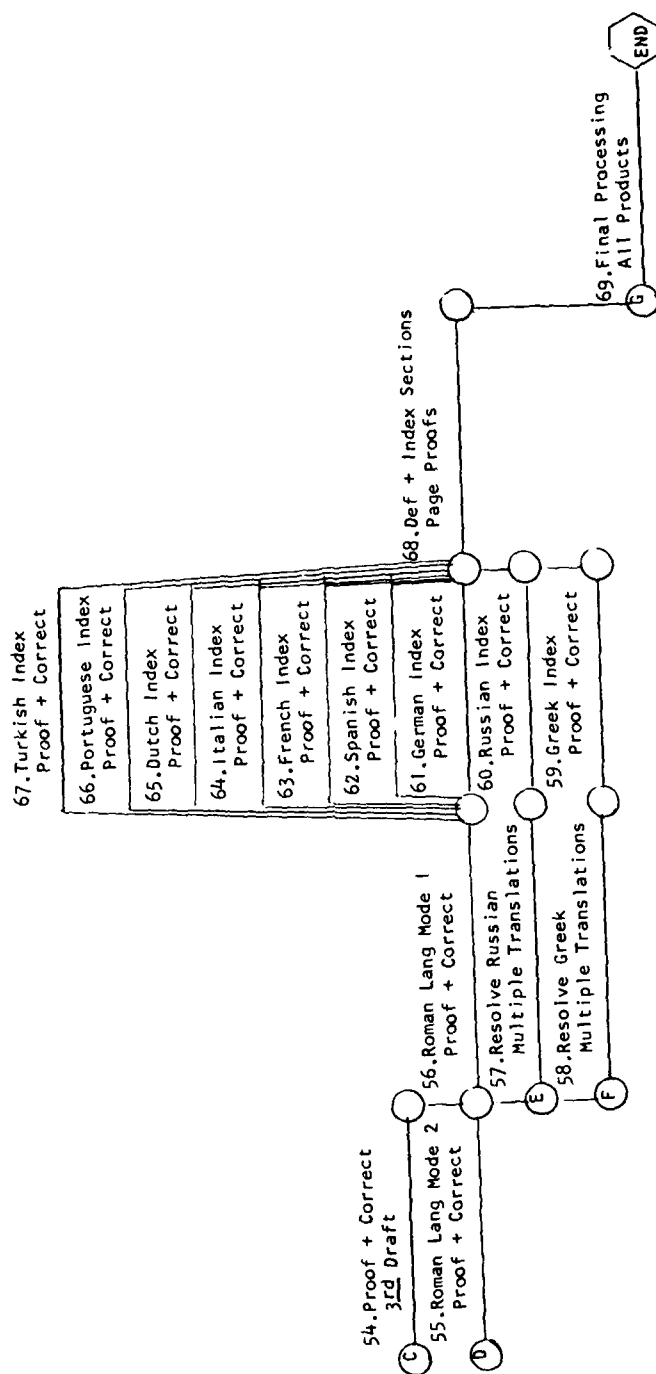


Figure 2-5 (Cont.) — AGARD MAD Workflow PERT Chart

2.6.2 Front Matter

The front matter contains the following elements (all but the instructions are in English and French):

- o Preliminary title pages
- o Table of Contents
- o Preface
- o Introduction
- o Acknowledgements
- o Instructions in English
- o Instructions in French
- o Instructions in Dutch
- o Instructions in German
- o Instructions in Greek
- o Instructions in Italian
- o Instructions in Portuguese
- o Instructions in Turkish
- o Instructions in Spanish
- o Instructions in Russian

The preface contains a statement by the chairman of AGARD, Dr. Alan M. Lovelace, Deputy Administrator, U.S. National Aeronautics and Space Administration, on the purpose and objectives of the dictionary as a tool for scientists, engineers, and translators in the field of aeronautics. The introduction contains a statement of standards and introductory comments relating to the characteristics and idiosyncrasies of the dictionary. The acknowledgements contain a recognition of authorities and an expression of appreciation to cognizant personnel and agencies involved in the preparation of the dictionary. The instructions contain a brief description of the dictionary and a set of simple directions for its use.

2.6.3 Index Terms

The index is divided into nine subsections containing alphabetical lists of terms in languages other than English. Each term is accompanied by a reference or item number, keyed to its English language equivalent in the first part of the dictionary. Equivalent translations, synonyms, and homonyms are alphabetically sorted according to standard dictionary rules.

2.6.4 Abbreviations and Acronyms

This section is a list of aeronautical, aerospace, and related acronyms and abbreviations and their meanings. The acronyms and abbreviations are mixed and arranged in alphabetic order.

3. SOFTWARE REQUIREMENTS AND CAPABILITIES

3.1 BACKGROUND

All the computer programs written in support of the dictionary are now part of the library of software available at NASA STIF and can be used again or moved to another computer environment, as appropriate. No major existing program at NASA STIF was altered for the development of the dictionary, and only special purpose or interface programs had to be written. However, since the software was modified, a few latent errors (or bugs) were discovered and corrected.

The following existing software was used for MAD:

- o Administrative Terminal System (ATS)
- o NASA Online Input and Photocomposition System (NOIPS)
- o Scientific and Technical Information Modular System (STIMS)

The following special purpose software was prepared for MAD:

- o MAD to ATS Conversion
- o MAD to STIMS Conversion
- o Special Sort

3.2 ADMINISTRATIVE TERMINAL SYSTEM (ATS)

ATS is an IBM-supplied software package in the public domain that operates under the IBM 360 Operating System. Minor enhancements made at NASA STIF enable its use for a wide variety of STIF projects. ATS is an on-line, time-sharing, remote typewriter terminal (IBM 2741 compatible) text processing system that has full text edit capabilities including insert, replace, delete, move, etc., providing all necessary word processing functions.

Each item is stored on a random access disc, is available to a terminal operator in an interactive mode for text update, and can be addressed through its item or reference number. Each of the fields contained in the item is identified by an arbitrary code chosen such that unique algorithms can be applied. The fields and their ATS codes are as follows:

CODE FIELD

- @1 Category Numbers -- Four-digit numeric that represents the broad and specific categories of the item. These data are not displayed in the printed dictionary; however, they were used to distribute review copies to cognizant individuals in designated fields of expertise.
- @2 English Language Term -- Uppercase/lowercase characters consisting of one or more words.
- @3 Prime Definition -- Uppercase/lowercase text containing the prime definition of the term in English. The text of the definition flows from line to line.
- @4 Additional Definitions -- If the prime definition is not adequate to describe the term, the definition is delineated into multiple components of up to ten parts. The parts are numbered 1,2,3,etc., and the equivalent translations are numbered correspondingly.
- @13 Source of Prime Definition -- Three-digit numeric that represents the source of the definition. These data are not displayed in the printed dictionary; however, they were used to authenticate the exact wording prepared by the experts and reviewers.
- @14 German Translation
- @15 Spanish Translation
- @16 French Translation
- @17 Greek Translation
- @18 Italian Translation
- @19 Dutch Translation
- @20 Portuguese Translation
- @21 Russian Translation
- @22 Turkish Translation

NOTE 1: The non-English language translations using Roman characters were keyed on an ATS terminal with a standard keyboard and standard IBM Selectric ball element. The Greek language and Russian language translations were keyed using the same keyboard; however, special overlays were prepared for the Greek and Cyrillic characters corresponding to the Greek or Cyrillic IBM Selectric ball. Under software control, the appropriate character conversion was accommodated in the data base and subsequent output displays.

NOTE 2: An accent is keyed immediately after the character for which it is intended as a two-character doublet, where the first is a backspace (which is a character in ATS) and the

second is either the accent or a coded substitute for the accent. Of course, the photocomposed output has the correct accent; however, if the terminal or computer line printer cannot display the proper accent because of its limited character set, the proof contains an overstrike at the correct position, indicating that the correct accent was applied.

NOTE 3: Gender/case designations are indicated by (m), (f), (n), (pl), etc., as appropriate, and multiple translation terms are entered with @ signs as separators such that the software can determine where one term ends and the next one begins.

A sample ATS display is presented as Figure 3-1.

3.3 NASA ONLINE INPUT AND PHOTOCOMPOSITION SYSTEM (NOIPS)

NOIPS was designed, developed, and implemented at NASA STIF for standard production use. This system required no programming development modifications to product MAD; however, the style and format of the MAD pages had to be designed, defined, and tested. A Photon 713 photocomposition device located at NASA STIF was used because it was cost effective and readily available. A Cyrillic font and some special characters and accents were needed, and custom film strips, matrixes, and an additional drum to hold the entire character requirements of the AGARD MAD were acquired. Several attempts were required to provide a correct array because of the complexity and the lack of prior experience in multilingual publications. Some of the problems encountered were the inclusion of script style Cyrillics along with the standard style, accents not anticipated, characters not identified (dotless turkish i and final Greek sigma), and accents not oriented properly over/under the characters.

NOIPS operates on one of two input formats, ATS and STIMS. ATS input is employed for the most part to photocompose unstructured nonrecurring text that does not require preliminary processing, such as the front matter and the acronym and abbreviation sections of the dictionary. STIMS is a data base management system that provides a common format for special functions such as nonstandard sorting and index preparation automatically for photocomposition.

When ATS data are input to NOIPS, the commands to process the data and instruct the photocomposer machinery (e.g., displacement, point size of the typeset characters, leading space between the lines, etc.) are either contained directly in the text data stream, or the callouts for stored or predefined procedures are embedded within the text. This technique permits maximum flexibility for the page layout phase. The typographic commands available to the computer-aided photocomposition routines are varied and comprehensive and afford the same

01 110201204
02 accuracy
03 Generally the closeness of computations
or estimates to the exact values.
013 504
014 genauigkeit
015 exacto (perfecto)
016 exactitude
018 accuratezza
019 nauwkeurigheid
020 exactido
022 doğruluk
"17 ακριβεία
=21 ευεπτηνία

Figure 3-1 — Sample ATS Display of MAD Item

typographic versatility as standard typesetting equipment. The codes are cryptic but can be clearly understood by the trained user and contain elements such as ps8, which stands for point size 8; b18, which represents body lead 8; etc. This nomenclature is a language in itself, and the NOIPS software acts as a "language interpreter."

When STIMS data are input to NOIPS, the same typographic commands are used; however, they are no longer included in the stream of text. Since STIMS has specific field tags, and since each field is to be processed in the same manner, independent of the item, field tags precede each field and serve as pointers to the desired set of typesetting command codes.

3.4 Scientific and Technical Information Modular System (STIMS)

Like NOIPS, STIMS was designed, developed, and implemented at NASA STIF for standard production activities. This system required no programming development modifications to produce MAD, except for the inclusion of a sort algorithm that accommodated the various requirements and characteristics necessary to produce non-English terms that contain diacriticals and special character sets. In addition, STIMS tables had to be generated that not only described the detailed field characteristics but were also used internally to drive the software to produce index data for photocomposition. As part of the daily production process at NASA STIF, a viable allocation of resources is maintained within the computer environment, including backing storage space. Because the production of the AGARD MAD extended over a significant period of time, data has to be stored under STIMS rather than ATS since STIMS deals with mostly archival information and ATS is used for in-process activity. Tables were generated to convert the data from STIMS to ATS format as part of the production requirements for AGARD MAD updates.

3.5 MAD TO ATS CONVERSION

Special purpose software to convert the machine-readable data provided by Alpha-Numeric Ltd. into ATS format was developed and implemented by NASA STIF personnel. Specific rules were agreed on by the staff of the two organizations such that consistent techniques were employed in the original and addendum data submitted for the English language terms, their definitions, categories, and sources. Magnetic tapes were used for communication, and little difficulty was encountered in reading the data and preparing computer line printer proof output to review by cognizant personnel.

3.6 MAD TO STIMS CONVERSION

A special purpose program was developed and placed into production to convert the data in ATS relating to the English language terms, definitions, and non-English language translations into the STIMS format for subsequent STIMS software processing. Existing standard utility routines were employed to locate the records that required conversion and to perform the actual input/output functions.

4. ENGLISH TERMS AND DEFINITIONS

4.1 BACKGROUND

Because of cost considerations, data entry of English language terms, categories, sources, and definitions was accomplished in Great Britain by Alpha-Numeric Ltd. The copy was provided to Alpha-Numeric Ltd. by the members of the Working Group on the Mad and foreign representative with cognizance of the subject. The MAD was a routine keying activity for Alpha-Numeric Ltd. When the data were received at NASA STIF in machine-readable form on magnetic tape and processed into the computer environment for production of proofs for subsequent review, difficulties became evident. Data entry and quality assurance personnel were accustomed to exercising editorial freedom with respect to spelling, grammar, and syntax. To expedite processing, they did not ask an expert in the field or the author of the piece when an obvious error was identified. This approach brought about the "correction" of British terminology and British spelling to conform to U.S. standards. Needless to say, as soon as this was discovered, the British style of expression and spelling was reentered; however, vigilance was raised to keep this "helpful" correction assistance from recurring. A note of warning should have been identified at that time, but was not, with respect to hyphenation rules. As it turns out, the definitions are expressed in the British style with British spelling, however, hyphenation and word break rules with respect to those employed in the U.S. according to GPO standards did introduce awkward syntax in some instances.

At the outset of the project, the final size of the dictionary was not determined; however, the data were to be processed as they were transmitted and proofs were to be generated on a timely basis. At the conclusion of the first addendum stage, the dictionary contained approximately 7500 terms. Because of cost considerations, no new terms were accepted. After consolidation and refinement of the data, the dictionary contained 7319 terms.

4.2 SUBSTANCE OF THE TERMS AND DEFINITIONS

A term contains the uppercase/lowercase text in English, with only acronyms, abbreviations, or proper names shown in uppercase characters. The noun form of the term was employed in all appropriate instances.

Similarly, the definition is a grammatically correct collection of sentences with proper syntax displaying an articulate and concise meaning. Since the terms came from a variety of contributors, an editorial standard for terms and definitions was not imposed in order to retain a link to authoritative reference sources; thus both British and United States spelling will be found in the text.

Many of the definitions in the dictionary are original, but many were extracted from material already published and are presented either verbatim or in a slightly amended form. Permission to publish copyrighted material was readily obtained.

If a term could not be described adequately with a single explanation, or if the term contained multiple parts or meanings, the definition was delineated into multiple components. Cross references to related terms were made with a "See" statement.

Superscripts and subscripts were not used; instead a standard form was employed (e.g. H₂ for hydrogen).

5. REVIEW OF TERMS

The content of a dictionary such as the MAD cannot be static. It is acknowledged that work will continue, and many of the shortcomings of the 1980 edition will be corrected in subsequent editions. The precise meaning of some items changed in the time between their original entry and publication. In addition, the items may not be homogeneous because of the biases of the contributors. This not necessarily a significant feature in that the primary purpose of the dictionary is information transfer; it is not the object of a literary review. The dictionary was reviewed, updated, and scheduled for further scrutiny. As stated in the Introduction to the AGARD MAD, suggestions for inclusions in revised editions of the dictionary will be welcomed and should be sent to AGARD/NATO, France.

It became apparent during the development of the AGARD MAD that the wealth of information available through the participation of a wide variety and large number of contributors was rewarding even though it caused many difficulties, which were amplified when drafts were sent for review and changes and variations were requested.

The system installed at NASA STIF to accommodate change was extremely simple and thorough. The on-line interactive ATS editing system facilitated the instantaneous retrieval of the desired term through its item number; the item was then modified as directed by the editor on a marked-up manuscript page or an annotated computer-generated proof. Proofreading and review were accomplished through a visual copy check of proofs against manuscript; this was repeated until the desired quality was achieved. Complete backup to the machine data was always available due to the periodic archiving of the on-line files throughout the NASA STIF.

6. TRANSLATIONS AND DATA ENTRY

6.1 ROMAN CHARACTER TRANSLATIONS

Translations in languages that use Roman characters were entered on the IBM typewriter style terminal with a standard keyboard and standard IBM Selectric ball element. A three-character mnemonic followed by a blank character preceded the translation after the item was retrieved on-line through the item number. Multiple translations for the same term (variations, synonyms, homonyms, etc.) were accommodated by repeating the selected mnemonic as a new line entry or connecting the additional term to a previously keyed term with a special character as a separator. The mnemonics and connecting characters were employed for data entry and update purposes only; they are not part of the published dictionary or its display. Similarly, a technique was devised to key a diacritic as a two-character doublet immediately after the character for which it was intended by using the backspace character in ATS. Thus the playback of keyed data caused an overstrike with the accent, and the backspace was reserved to signify that the character following it was to be treated specially (e.g., to be centered above or below the previous character). This technique was used to generate some special characters such as the Polish and Swedish L or O (with the slash (/)).

6.2 GREEK AND CYRILLIC TRANSLATIONS

The translations entered into the data base for the Greek and Russian languages were accomplished in the same manner as the Roman character translations, with the addition of the codes necessary to identify these languages as well as the employment of keyboard overlays and special IBM Selectric ball elements. Of special note with respect to nonstandard fonts, the keyboard operator had to be a translator trained in the use of the ATS system in order to read the manuscript input and review the hard copy. The display of the Greek and Cyrillic data with standard hard copy media (e.g., line printer) is not readily intelligible and cannot

be utilized for review. Because of the limited character set available with the hard copy devices, photocomposition was used for proofs of Greek and Russian material. To increase the turn-around time for the production of readable output, an abbreviated output format was used to display only the Greek or Russian along with the English term for proof purposes.

6.3 OTHER CONSIDERATIONS

As with the multiple components of a definition, the interpretation of the translations is left to the reader. For the most part, there was no intended correspondence between the various components of multiply-stipulated translations in more than one language.

7. FORMAT AND STYLE

7.1 GENERAL DESCRIPTION

The trim size of the AGARD MAD is approximately 21 X 26 cm(50 X 62 picas). The image area is 42 X 55-2/3 picas; the margins are 34 points inside, 40 points outside, and 36 points on top and bottom.

The running head of the three major sections contains sufficient information to identify the first item on a left-hand page and the last item on a right-hand page. Folios are centered on the bottom and consist of lowercase Roman numerals for 20 pages of front matter and Arabic numerals for 876 pages. The basic typesize is 8 points on a body lead of 8 points, and the typefaces are Universe bold and medium.

7.2 DEFINITIONS AND TRANSLATIONS

The Definitions and Translation Section has a three-column format. The items are in alphabetic sequence of the English language terms. Each item is numbered in a one-up sequence, with 10001 for the first and 17319 for the last. In addition to the item number, English term, and definition (including all the components), the translations are presented in the order described in Section 2.6.1 along with the two-character code in Times New Roman Small Caps. A case or gender designation is displayed in parenthesis and set in italics. A sample page is shown in Figure 7-1.

7.3 INDEX TERMS

The Index Terms Section has a three-column format. Each of the nine languages is sorted by the alphabetic sequence of the language. Each entry consists of two elements, the item number and the translated term from which an easy reference is made to the Definitions and Translations Section. Sample pages for each of the nine indexes are shown in Figures 7-2 through 7-10.

FR

aide (f) à la navigation à courte distance

15880	aide (f) à la navigation à courte distance	10766	alidade (f)	10264	amarrage (m) d'un appareil
14754	aide (f) à la pénétration	13226	alignement (m) géomagnétique	15859	ambiance (f) manche de chemise
10558	aides (f pl) à l'approche	14968	alimentation (f)	10960	ame (f) d'aube
13827	aides (m pl) à l'atterrissage	11035	alimentation (f) auxiliaire	16115	ame (f) de longeron
17260	aile (f)	13125	alimentation (f) par gravité	12122	amerrissage (m) force
13563	aile (f) à envergure infinie	16805	alizes (m pl)	11543	amincissement (m) de compression
11777	aile (f) brisée	17134	allée (f) tourbillonnaire	10458	amino plastiques (m pl)
11983	aile (f) delta	13783	allée (f) tourbillonnaire de Benard Karman	11369	amortage (m)
11333	aile (f) demi-tonneau			11901	amortir
12143	aile (f) double delta	10400	alliage (m)	11903	amortissement (m)
16564	aile (f) effilée	13298	alliage (m) apte à prendre la trempe	10134	amortissement (m) aérodynamique
11790	aile (f) en croissant	11845	alliage (m) cryogénique	11798	amortissement (m) critique
10595	aile (f) en flèche	12929	alliage (m) de coupe	11743	amortissement (m) de Coulomb
13212	aile (f) en M	11714	alliage (m) de cuivre au beryllium	17099	amortissement (m) des vibrations
14381	aile (f) en N	14456	alliage (m) non améliorable par trempe et revenu	16373	amortissement (m) structural
11777	aile (f) en V			15860	amortisseur (m)
17286	aile (f) en W	14055	alliages (m pl) à bas point de fusion	16045	amortisseur (m)
12481	aile (f) équivalente	14088	alliages (m pl) au magnésium	11902	amortisseur (m)
10157	aile (f) racine	14415	alliages (m pl) au nickel	11083	amortisseur (m) (pneus)
12033	aile (f) losange	10450	alliages (m pl) d'aluminium	15857	amortisseur (m) de shimmy
15967	aile (f) montée en biais	16741	alliages (m pl) de titane	15870	amortisseur (m) de train
14552	aile (f) ovale	13009	alliages (m pl) fusibles	10961	amortisseur (m) de trainée
16018	aileron (m) à fente	13294	alliages (m pl) résistant à la chaleur	13813	amortisseur (m) de trainée
14874	aileron (m) à fente	10612	allongement (m)	10460	amphibie (m)
17000	aileron (m) d'extrados	10952	allongement (m) de l'aube	11018	amphibie (m) à coque
15481	aileron (m) escamotable (spoiler de gauchissement)	10980	allongement (m) de pale	10461	amplitude (f)
		13971	allongement (m) des suspentes	15306	amplitude (f) de charge
12564	aileron (m) externe	12293	allongement (m) efficace	15307	amplitude (f) de contrainte
12824	aileron (m) libre	10396	allotropie (f)	10463	analemmes (m)
12861	aileron (m) muni d'anti-tab	13570	allumage (m) en vol	12705	analyse (f) par éléments finis
15966	aileron (m) oblique	16433	allumage (m) par tête chaude	12045	analyse (f) thermique différentielle
10210	ailerons (m pl)	13482	allumeur (m)	10464	anémométrique
10545	ailerons (m pl) anti-lacet	16751	allumeur (m) torche	16034	ancrage (m)
12965	ailerons (m pl) anti-lacet	10406	alimantarat (m)	16517	ancrage (m) par la poupe
12043	ailerons (m pl) différentiels	15469	altération (f) réparable	10468	anémographe (m)
12965	ailerons (m pl) Frise	15504	altération (f) réversible	10469	anémomètre (m)
16167	aileron (m) spoiler à fente	10420	altimètre (m)	10350	anémomètre (m)
16016	aileron spoiler (m) avec bec à fente	10007	altimètre (m) absolu	13391	anémomètre (m) à fil chaud
16166	aileron (m) spoiler de gauchissement	10833	altimètre (m) barométrique	13859	anémomètre (m) à laser
16170	aileron (m) stabilisateur (hydravion)	15009	altimètre (m) barométrique	10317	anémomètre (m) portatif
12749	aileron (m) volet	11173	altimètre (m) cabine	16870	angle (m) à l'équilibre
17264	ailes (f)	15211	altimètre (m) radar	13112	angle (m) au sommet du fuselage
10667	aile (f) soufflée	16071	altimètre (m) sonore	13571	angle (m) d'efflux
16412	aile (f) supercritique	10422	altimètre (f)	12752	angle (m) de battement
11416	aile (f) tronquée	10423	altitude (f)	13902	angle (m) de bord d'attaque
11688	ailette (f) de contrôle	12391	altitude (f)	16811	angle (m) de bord de fuite
16516	ailette (f) de queue	10008	altitude (f) absolue	11684	angle (m) de braquage (gouvernes)
11707	ailette (f) de refroidissement	15010	altitude (f) barométrique	10206	angle (m) de braquage d'aileron
16522	aile (f) volante	11174	altitude (f) cabine	15634	angle (m) de braquage de la gouverne de direction
12866	aile (f) volante	11189	altitude (f) corrigée	12394	angle (m) de braquage de la profondeur
12401	air (m) comprimé de secours	11795	altitude (f) critique	12396	angle (m) de braquage d'élevon
11704	air (m) de refroidissement	11840	altitude (f) de croisière	16501	angle (m) de braquage du volet compensateur
15282	air (m) dynamique	11841	altitude (f) (niveau (m)) de croisière	10948	angle (m) de calage de la pale
15918	air (f) à signaux	10118	altitude (f) de l'aérodrome	11574	angle (m) de cône
10559	air (f) d'approche	12204	altitude (f) de largage	12049	angle (m) de contact d'un diffuseur
13580	air (f) d'approche initiale	11988	altitude (f) densimétrique	11616	angle (m) de contact
13830	air (f) d'atterrissage	12466	altitude (f) d'équilibre	11771	angle (m) de crabe
13850	air (f) d'atterrissage	15314	altitude (f) de rétablissement à la puissance nominale	10483	angle (m) de flexion (des filets d'air) vers le bas
16537	air (f) de décollage	15666	altitude (f) de sécurité	10491	angle (m) de flexion vers le haut (des filets d'air)
10260	air (f) de manoeuvre (d'attente)	16830	altitude (f) de transition	10480	angle (m) de depression
14142	air (f) de manoeuvres	13523	altitude (f) indiquée	10488	angle (m) de derapage
16538	air (f) de montée au décollage	14282	altitude (f) minimale de sécurité	12179	angle (m) de derive
14351	air (f) de mouvement	14277	altitude (f) minimum de vol	12296	angle (m) de dièdre efficace
10571	air (f) de stationnement	15314	altitude (f) nominale	16468	angle (m) de flèche (arrière ou avant)
13260	air (f) de stationnement	12482	altitude (f) oxygène équivalente	13866	angle (m) de gîte
18679	air (f) du col	15010	altitude (f) pression	12323	angle (m) d'éjection
18996	air (m) en altitude	13528	altitude (f) pression indiquée	17295	angle (m) de lacet
14891	air (m) polaire	15212	altitude (f) radar	13886	angle (m) de lancement
10988	air (m) prélevé	15934	altitude (f) simulée	14073	angle (m) de Mach
16879	air (m) tropical	16887	altitude (f) vraie	16680	angle (m) de manette
15892	ajustage (m) à chaud	10448	altocumulus (m)	13604	angle (m) d'entrée (gyro)
12682	ajustage (m) serré	10449	altostratus (m)	11888	angle (m) de pas cyclique
10427	alcainure (f) d'altitude	10451	aluminage (m)	13093	angle (m) de plane (de descente)
10426	alciose (f) d'altitude	13165	alvéole (m) de point fixe		
15290	aléatoire	11299	amarrage (m) central		
10761	alidade (f)				

Figure 7 2 -- French Index

NE

afdichtingsmiddel (n)

15743	afdichtingsmiddel (n)	13879	afworp	10470	aneroïde barometer
15743	afsluitmiddel (n)	15898	afzetten	10471	aneroïde kapsule
10191	affine deformatie	11883	afzetten	10498	anilinoformaldehydharz
16815	afgeande wervel	16985	afzonderlijke injecteur (per cilinder)	10500	anisolesticiteit
11872	afgebroken leiding	12315	afzuijing door expansie	10501	anisometrie
10875	afgebroken landing	17184	afzwaaien	10502	anisotroop laminaat (n)
12084	afgebroken nadering	10203	agoon	10503	anisotropie
15747	afgedichte inwendige balancering	10280	air data computer	10486	ankerkabel
11020	afgeknot rompachterstuk (n)	10058	akoestische breking	11301	ankerkabel verspanning
14116	afgeknotte vleugel	10051	akoestische dispersie	14336	ankerkegel
10391	afgelegde afstand bij uitbranden	10052	akoestische emissie	11300	ankerlier kabel
12003	afgeleide informatie	10060	akoestische trilling	14337	ankerpunt (n)
15718	afgerageld conform Schuler-slingering	10059	akoestisch spektrum (n)	14338	ankerspij
15819	afhandelen	10072	aknief doelzoeken	16248	anloopwervel
15420	afkeuren	10073	aknief doelzoekende geleiding	10513	anodisch beitsen
15421	afkeuring	10067	aknegrenzen (pl)	15661	anodische bescherming
15422	afkeurinterim (n)	10067	aknelijnen (pl)	10512	anodische laag
12243	afkoelingsindex	11672	aknelijnen (pl)	10511	anodisch reinigen
11954	afleidingsdoel (n)	16083	akneradius	10514	anodiseren
11613	afnemersrisiko (n)	15275	akneradius	10515	anoxie
14742	afpeilbare laag	13509	akneturbine	10516	A N radio range
10300	AFR	10070	aktieve dekodering	10517	antenne
15719	afregelen conform schuier-slingering	10071	aktieve geleiding	10105	antenne
10387	afregeling	10068	aktieve kool (stof)	14754	anti-afweersysteem (n)
16808	afrollen	10074	aktieve redundantie	10520	anti-coagulant (n)
12754	afrollen	10075	aktieve reparatietijd	10522	anticyclo genese
14162	afschermen	10069	aktivator	10523	anticyclolyse
18105	afschuiferen	11500	aktiveren van alle schietstoelen met een kommando	10524	anticycloon (hoge drukgebied)
15204	afschrikharder	10382	alarmering (dienstverlening)	10532	anti-oxidant (n)
15205	afschrikken	15334	alarmmoods	10533	anti-ozonant (n)
12872	afschrikken in waterdamp	15335	alarmpositie	10544	antipassaat
15846	afschuifbreuk	10381	alciad (n)	10535	antrolkabel
15848	afschuifbreuk	10409	alfa cellulose	10537	anti-statisch agens (n)
12741	afslaan	10411	alfa ijzer (n)	10542	anti-symmetrische flutter
16704	afslurter	10383	alfarubbers (pl)	13077	anti-verblindingscherm (n)
11615	afsmeltelektrode	10384	alford raamantenne	10527	antivries (n)
13021	afstand	13055	algemeen luchtverkeer (n)	10518	antropometrie
11498	afstandbediening	11644	algemeen verkeersgebied (n)	15468	antwoordontvanger
13700	afstandhouders (pl)	10579	algemeen verkeersleidingscentrum (n)	10882	anvliegbakensysteem (n)
12112	afstandmeetapparatuur (DME)	13056	algemene luchtvaart	16393	aperiodiek efnemende uitwijking
11874	afstandsfout door breking	10580	algemene verkeersleiding	12128	aperiodiek toenemende uitwijking
15523	afstelhoek	10389	alkydharsen (pl)	10550	apogeu (n)
15521	afstelling	10388	alkydkunststoffen (pl)	10551	apogeu (n)
12865	afstelling	10403	alieuweervliegtuig (n)	10552	apogeu raketmotor
15527	afstelstand	10396	alieuweervliegtuig (n)	14461	apolar
14948	afstroomtouwkracht	10404	alieuweervliegtuig (n)	13199	apparatuur in geleidingsstation
14946	afstroomweerstand	10405	alieuweervliegtuig (n)	14891	arctische lucht
10988	afstroomweerstand	10404	alieuweervliegtuig (n)	10581	areanavigatie
11177	afstroomweerstand	10407	alieuweervliegtuig (n)	10588	arm (verlengings)stelsel (n)
15706	afstroomweerstand	10408	alieuweervliegtuig (n)	13910	arm mengsel (n)
11745	afstroomweerstand	10408	alieuweervliegtuig (n)	10589	aromatische brandstof
10199	afstroomweerstand	11314	als luchtwaardig certificeren	10598	artikuleringsindex
10200	AFTN station (n)	10418	alternatieve afvuurhandgreep	10608	A scherm (n)
10161	afvoer van patienten door de lucht	10414	alternierend copolymeer (n)	15290	aselekt
13880	afvuren	10419	alternobarische duizeligheid	15299	aselekte steekproef
12322	afvuren (het)	15041	alternobarische duizeligheid	10610	asgehalte (n)
12590	afvuurkoord (n)	10448	altocumulus	10288	ASMI
15762	afvuurhandgreep bevestigd aan de zitpan	10449	altostratus	16506	assemblerasputen (pl)
12594	afvuurhandgreep met gelaatscherm	10451	aluminen	10745	as symmetrisch
12595	afvuurmechanisme (n) met gelaatscherm	10451	aluminiseren	10621	A stadium (n)
12593	afvuurschermholte	10450	aluminiumlegeringen (pl)	10622	astrohoogte
12207	afwerpbare tank	14571	aluminiumlegeringen (pl)	10625	astronaut
13769	afwerpbare tank	14570	aluminiumlegeringen (pl)	15720	astronaut deskundige
15165	afwerpbare uithoudertank	14573	aluminiumlegeringen (pl)	10633	astronomisch azimut (n)
12203	afwerpen	14572	aluminiumlegeringen (pl)	10628	astronomische breedte
14060	afwerpen met lage vaansnelheid	10456	American Ephemeris	10631	astronomische breedtecirkel
12093	afwerper	10118	amfibievlugboot	10626	astronomische dag
12204	afwerphoogte	10460	amfibievlugboot (n)	10627	astronomische evenaar
12205	afwerphoogte	12822	amfibievlugboot (n) met drivers	10629	astronomische lengte
10283	afwerpladkist	10457	aminohars	10630	astronomische meridiaan
12208	afwerpproef	10458	aminokunststoffen (pl)	10632	astropositie
15429	afwerppunt (n)	10459	ammoniak insputing	16926	asturbine motor
12209	afwerpzona	15862	amortiseurskoord (n)	14429	as van het tipcirkelvak
12086	afwijking	10461	amplitude	14427	as van konstante bladhoek
12022	afwijking	10462	AMVER systeem (n)	10749	as van vrijheid
		10464	anametrisch	10752	asverzetting
		15827	anderhalfdekker	10638	asymmetrische belasting
		10468	anemograaf		

Figure 7-3 -- Dutch Index

DE

Abwurfprobe (f)

12208	Abwurfprobe (f)	18083	Aktonradius (m)	10566	Anflugfeuer (n, pl)
12204	Abwurfhöhe (f)	15275	Aktonradius (m)	10569	Anflugfläche (f)
12207	Abwurfkanal (m)	10089	Aktivator (m)	10568	Anflugfolge (f)
13769	Abwurfkanal (m)	10070	aktive Dekodierung (f)	10560	Anflugfuge (f)
12208	Abwurfversuch (m)	10071	aktive Lenkung (f)	14008	Anflugfunkfeuer (n)
10888	Abzupflut (f)	10074	aktive Redundanz (f)	10568	Anflughöhenbegrenzung (f)
11177	Abzupflut (f) für Kabindruckbekämpfung	10072	aktives Zielsuchen (n)	10239	Anflugkontrolldienst (m)
14745	Abzug (m) bei Folgestichprobenprüfung	10073	aktive Zielschlenkung (f)	10563	Anflugkontrolle (f)
12594	Abzuggriff (m) am Gesichtsschutz	10088	Aktivkohle (f)	10561	Anflugkontrollradar (n)
18877	Abzugstange (f)	10052	akustische Ausstrahlung (f)	10562	Anflugkontrollradargerät (n)
18267	Abzugstange (f)	10051	akustische Dispersion (f)	11761	Anflugkurven (m)
15752	Abzugstollen (m)	10060	akustische Schwingung (f)	10566	Anflugkurvenbetriebszustand (m)
15752	Abzugstück (n)	16071	akustisches Echolot (n)	14849	Anflug (m) mit horizontaler
10752	Achsenversetzung (f)	10668	akustisches Minimum (n)	Radarführung	
14560	Achtel (n)	10059	akustisches Spektrum (n)	10559	Anflugsektor (m)
18292	Achterstaven (m)	10382	Alarmdienst (m)	10564	Anflugstrichter (m)
18525	Achterstaven (m)	16971	Alarmstufe (f)	17117	Anflugwinkelanzeigeanlage (f)
10063	Acrylharz (n, pl)	10381	Aldurat (n)	10474	Anflugwinkelzeiger (m)
10065	Acrylharz (n, pl)	10383	Alfin-Kautschuk (m, pl)	10570	Anflugwippen (m)
10068	Acrylnitril-Butadien-Styrol-	10384	Alford-Schlierenantenne (f)	10115	angelastete Klappe (f)
Kopolymerisat (n)		10389	Alkydharz (n, pl)	15443	angelastetes Ausgleichsgewicht (n)
10279	A C V	10388	Alkyd-Kunststoffe (m, pl)	13049	angelastetes Hilfsradar (n)
10082	Adapter (m)	16085	Altenflugzeit (f)	13528	angezeigte Druckhöhe (f)
10083	adaptive Regelung (f)	13056	allgemeine Luftfahrt (f)	13522	angezeigte Eigengeschwindigkeit (f)
10083	adaptive Steuerung (f)	13055	allgemeiner Luftverkehr (m)	13522	angezeigte Fahrt (f)
10088	Addukt (n)	13057	allgemeines Wetterüberblick (f)	13523	angezeigte Flughöhe (f)
10087	Addukt-Kautschuk (m, pl)	10396	Allotropie (f)	13526	angezeigte Machzahl (f)
10093	adäquate Strömung (f)	10403	Allwetterflugzeug (n)	13524	angeregter dynamischer Druck (m)
12087	adressenselektives Funkleuersystem (n)	10405	Allylsilber (n)	10387	Anliegen (n)
10085	adressenselektives Funkleuersystem (n)	10406	Almkanalarzt (m)	16186	Anlass (m)
10100	Advektion (f)	10412	Alpha-Eins-Winkel (m)	10499	Anlassformelhydrolyse (n)
10101	Advektionsnebel (m)	10411	Alphasens (n)	10500	Anpassbarkeit (f)
11328	Aenderung (f)	10409	Alphaselbst (f)	10501	Anpassbarkeit (f)
12469	Aequiphaseflächen (f, pl)	11456	als Rettungskabine ausgelegter	10502	anisotropes Laminat (n)
12470	Aequipotentiale (f)	Führerraum (m)	10503	Anisotropie (f)	
12475	Aequivalenzverhältnis (n)	10414	alternierendes Kopolymer (n)	16266	Ankerschne (f)
10109	Aerodrome (f)	10202	Alterung (f) Altern (n)	10466	Ankersen (n)
10110	Aeroballistik (f)	10448	Altocumulus (m)	11300	Ankersen (n)
10112	Aerobiologie (f)	10448	Altostratus (m)	11300	Ankertaue (n)
10113	Aerodontologie (f)	10449	Altostratus (m)	12874	ankleppbares Blatt (n)
10146	Aerodyn (n)	10451	Aluminium (n)	10516	A-N Kurzfunkfeuer (n)
10138	aerodynamische Aufheizung (f)	10450	Aluminiumlegierungen (f, pl)	10505	A N L
10134	aerodynamische Dämpfung (f)	14460	amagnetischer Stahl (m)	10504	Anlassen (n)
10152	aerodynamische Fläche	10942	Amaurosis (f) fugax	12178	Anlassen (n)
10142	aerodynamische Fläche (f)	10456	American Ephemeris (f)	16602	Anlassen (n)
10139	aerodynamische Porosität (f)	10457	Aminharz (n)	17228	Anlassen (n) mit Kraftstoffüberschuss im
10129	aerodynamischer Ausgleich (m)	10458	Aminoplaste (n, pl)	Abgassystem	
10133	aerodynamischer Beiwert (m)	10459	Ammoniakanspritzung (f)	16247	Anlassengenerator (m)
10138	aerodynamischer Flugkörper (m)	11018	Amphibienflugboot (n)	13508	Anlasser (m) mit Schnapper
10143	aerodynamischer Kondensstreifen (m)	10460	Amphibienflugzeug (n)	15062	Anlasserkraftstoff einspritzen
10145	aerodynamisches Luftfahrzeug (n)	10460	Amphibienflugzeug (n)	13390	Anlasserüberhitzung (f)
10154	aerodynamisches Profil (n)	10461	Amphibienflugzeug (n)	11036	Anlasserzündung (f)
10141	aerodynamische Stabilität (f)	10461	Amplitude (f)	17159	Anlaufzeit (f)
10144	aerodynamische Verwindung (f)	10462	AMVER-System (n)	10516	A-N Leitstrahlfunkfeuer (n)
10130	aerodynamische Wuchtung (f)	10463	Analemma (n)	13802	Anlenkbojen (m)
10147	aerodynamisches Ausklappen (n)	15197	Analog-Digital-Umsetzung (f)	10650	anliegende Stossweite (f)
10148	Aeroelastizität (f)	15197	Analog-Digital-Umwandlung (f)	13160	an Masse legen
10150	Aeroelastizität (f)	12705	Analyse (f) mit finiten Elementen	10033	Annahme (f)
10157	aerodynamische Flügel (m)	10464	anametrisch	10041	Annahmeerprobung (f)
10158	Aerologation (f)	10465	anametrisch abgeleitete Informationen	14589	Annahmekennlinie (f)
10159	Aerologie (f)	(f, pl)	10043	Annahmekennlinie (f)	
10164	aeronautische Karte (f)	10044	Anbaugeräte (n, pl)	14590	Annahmekennlinie (f)
10175	Aeroneurose (f)	12400	Anbordgehen (n)	10034	Annahmekriterien (n, pl)
10175	Aeroneurosis (f)	14939	Anbringungsfehler (m)	10035	Annahmeprüfung (f)
10176	Aeronomie (f)	15827	Andershalbdecker (m)	10040	Annahme-Stichprobenprüfplan (m)
10178	Aeropause (f)	10469	Anemometer (n)	10038	Annahmeverfahren (n)
10182	Aerosat-System (n)	13929	anerkannter Prüfer (m) für Luftfahrtgerät	10037	Annahmewahrscheinlichkeit (f)
10183	Aerosinusitis (f)	15744	Aneroid (n)	15073	Annahmewahrscheinlichkeit (f)
10186	Aerostat (m)	10470	Aneroidbarometer (n)	10036	Annahmehöhe (f)
10188	Aerothermoelastizität (f)	11260	Anfahrwirbel (m)	11959	Annahmehöhe (f)
10177	Aerotitis (f) media	16248	Anfahrwirbel (m)	10031	annahmehere mittlere Lebensdauer (f)
12514	A ether (m)	13579	Anfangsanflug (m)	10032	annahmehere Qualitätsgrenzlinie (f)
10191	affine Deformation (f)	13580	Anfangsanflugbereich (m)	10514	anodische Oxidation (f)
10685	AGACS	13581	Anfangsaufrichtung (f)	10511	anodische Reinigung (f)
10203	Agone (f)	13583	Anfangsbestand (m)	15661	anodischer Schutz (m)
10212	Air Altmasc (n)	10557	Anflug (m)	10513	anodisches Beizen (n)
10064	Akrylkautschuk (m, pl)	12111	Anflug-DME (f)	10512	anodische Schicht (f)

Figure 7-4 -- German Index

ΗΕ αεροπέδη (f)

10223	ἀεροπύλη (f)	10340	ἀεροστατογραφικό (m)	12633	αεροσκάφος (n) εξοπλισμός
18133	ἀεροπύλη (f)	15075	ἀεροστρόμοι (n) (πλάσματα)	12587	αεροσκάφος (n) κατασκευασμένο
10179	ἀεροπλάνο (n)	10375	ἀεροσταθολογιστής (m)	13094	αεροσκάφος (n) κατασκευασμένο
13658	ἀεροπλάνο (n) αεροκατασκευασμένο	18293	ἀεροσυμπίεση (f)	14875	αεροσκάφος (n) μεταβλητό
12524	ἀεροπλάνο (n) λιμάνι εκκινήσεων	14808	ἀεροσκάφος (n) αεροπλάνο	11289	αεροσκάφος (n) μεταβλητό
11200	ἀεροπλάνο (n) ΚΑΡΑΡΤ	18085	ἀεροσκάφος (n) βολή	15818	αεροσκάφος (n) μεταβλητό
17090	ἀεροπλάνο (n) κατασκευασμένο	10152	ἀεροσκάφος (n) βολή	13980	αεροσκάφος (n) μεταβλητό
	αεροπλάνο (n) κατασκευασμένο	11398	ἀεροσκάφος (n) βολή	12726	αεροσκάφος (n) μεταβλητό
16803	αεροπλάνο (n) μεταβλητό	10340	αεροσκάφος (n) βολή	16912	αεροσκάφος (n) μεταβλητό
15875	αεροπλάνο (n) μεταβλητό	10327	αεροσκάφος (n) βολή	14851	αεροσκάφος (n) μεταβλητό
13851	αεροπλάνο (n) μεταβλητό	14530	αεροσκάφος (n) βολή	10086	αεροπλάνο (n, pl)
8546	αεροπλάνο (n) μεταβλητό	13766	αεροσκάφος (n) βολή	10084	αεροπλάνο (n) μεταβλητό
15162	αεροπλάνο (n) μεταβλητό	10234	αεροσκάφος (n) βολή	10083	αεροπλάνο (n) μεταβλητό
10246	αεροπλάνο (n) μεταβλητό	13881	αεροσκάφος (n) βολή	15879	αεροπλάνο (n)
11939	αεροπλάνο (n) μεταβλητό	10758	αεροσκάφος (n) βολή	15244	αεροπλάνο (n) μεταβλητό
13065	αεροπλάνο (n) μεταβλητό	10784	αεροσκάφος (n) βολή		
15286	αεροπλάνο (n) μεταβλητό	10757	αεροσκάφος (n) βολή	15241	αεροπλάνο (n) μεταβλητό
14111	αεροπλάνο (n) μεταβλητό	10763	αεροσκάφος (n) βολή	15243	αεροπλάνο (n) μεταβλητό
10344	αεροπλάνο (n) μεταβλητό	10429	αεροσκάφος (n) βολή	15246	αεροπλάνο (n) μεταβλητό
10378	αεροπλάνο (n) μεταβλητό	10756	αεροσκάφος (n) βολή	15237	αεροπλάνο (n) μεταβλητό
10321	αεροπλάνο (n) μεταβλητό	10782	αεροσκάφος (n) βολή	15238	αεροπλάνο (n) μεταβλητό
10337	αεροπλάνο (n) μεταβλητό	10781	αεροσκάφος (n) βολή	15235	αεροπλάνο (n) μεταβλητό
10339	αεροπλάνο (n) μεταβλητό	10754	αεροσκάφος (n) βολή	15275	αεροπλάνο (n) μεταβλητό
10342	αεροπλάνο (n) μεταβλητό	12401	αεροπλάνο (n) μεταβλητό	16083	αεροπλάνο (n) μεταβλητό
10221	αεροπλάνο (n) μεταβλητό	10988	αεροπλάνο (n) μεταβλητό	17231	αεροπλάνο (n) μεταβλητό
10314	αεροπλάνο (n) μεταβλητό	11704	αεροπλάνο (n) μεταβλητό	16842	αεροπλάνο (n) μεταβλητό
10729	αεροπλάνο (n) μεταβλητό	15285	αεροπλάνο (n) μεταβλητό	15815	αεροπλάνο (n) μεταβλητό
10161	αεροπλάνο (n) μεταβλητό	11861	αεροπλάνο (n) μεταβλητό	16940	αεροπλάνο (n) μεταβλητό
10730	αεροπλάνο (n) μεταβλητό	11857	αεροπλάνο (n) μεταβλητό	14740	αεροπλάνο (n) μεταβλητό
10727	αεροπλάνο (n) μεταβλητό	11854	αεροπλάνο (n) μεταβλητό	13905	αεροπλάνο (n) μεταβλητό
10357	αεροπλάνο (n) μεταβλητό	14017	αεροπλάνο (n) μεταβλητό	17184	αεροπλάνο (n) μεταβλητό
10731	αεροπλάνο (n) μεταβλητό	18027	αεροπλάνο (n) μεταβλητό		
10238	αεροπλάνο (n) μεταβλητό	12514	αεροπλάνο (n) μεταβλητό	10451	αεροπλάνο (n) μεταβλητό
10725	αεροπλάνο (n) μεταβλητό	10381	αεροπλάνο (n) μεταβλητό	12186	αεροπλάνο (n) μεταβλητό
17195	αεροπλάνο (n) μεταβλητό	12680	αεροπλάνο (n) μεταβλητό	15279	αεροπλάνο (n) μεταβλητό
	αεροπλάνο (n) μεταβλητό	15184	αεροπλάνο (n) μεταβλητό	14687	αεροπλάνο (n) μεταβλητό
10258	αεροπλάνο (n) μεταβλητό	11850	αεροπλάνο (n) μεταβλητό	12407	αεροπλάνο (n) μεταβλητό
10343	αεροπλάνο (n) μεταβλητό	15805	αεροπλάνο (n) μεταβλητό	10536	αεροπλάνο (n) μεταβλητό
10237	αεροπλάνο (n) μεταβλητό	15804	αεροπλάνο (n) μεταβλητό	1671	αεροπλάνο (n) μεταβλητό
10297	αεροπλάνο (n) μεταβλητό	15802	αεροπλάνο (n) μεταβλητό	13209	αεροπλάνο (n) μεταβλητό
10297	αεροπλάνο (n) μεταβλητό	12604	αεροπλάνο (n) μεταβλητό	15480	αεροπλάνο (n) μεταβλητό
18522	αεροπλάνο (n) μεταβλητό	18402	αεροπλάνο (n) μεταβλητό	15358	αεροπλάνο (n) μεταβλητό
14811	αεροπλάνο (n) μεταβλητό	11230	αεροπλάνο (n) μεταβλητό	15480	αεροπλάνο (n) μεταβλητό
18309	αεροπλάνο (n) μεταβλητό	15360	αεροπλάνο (n) μεταβλητό	14686	αεροπλάνο (n) μεταβλητό
12671	αεροπλάνο (n) μεταβλητό	12751	αεροπλάνο (n) μεταβλητό	11941	αεροπλάνο (n) μεταβλητό
	αεροπλάνο (n) μεταβλητό	13628	αεροπλάνο (n) μεταβλητό	16200	αεροπλάνο (n) μεταβλητό
10613	αεροπλάνο (n) μεταβλητό	12497	αεροπλάνο (n) μεταβλητό	12196	αεροπλάνο (n) μεταβλητό
10265	αεροπλάνο (n) μεταβλητό	18170	αεροπλάνο (n) μεταβλητό	15784	αεροπλάνο (n) μεταβλητό
	αεροπλάνο (n) μεταβλητό	14740	αεροπλάνο (n) μεταβλητό	10548	αεροπλάνο (n) μεταβλητό
14727	αεροπλάνο (n) μεταβλητό	13905	αεροπλάνο (n) μεταβλητό	15513	αεροπλάνο (n) μεταβλητό
10613	αεροπλάνο (n) μεταβλητό	17184	αεροπλάνο (n) μεταβλητό	13314	αεροπλάνο (n) μεταβλητό
17148	αεροπλάνο (n) μεταβλητό				
17145	αεροπλάνο (n) μεταβλητό	10451	αεροπλάνο (n) μεταβλητό	16257	αεροπλάνο (n) μεταβλητό
16716	αεροπλάνο (n) μεταβλητό	12186	αεροπλάνο (n) μεταβλητό	10981	αεροπλάνο (n) μεταβλητό
18386	αεροπλάνο (n) μεταβλητό	15279	αεροπλάνο (n) μεταβλητό		
18554	αεροπλάνο (n) μεταβλητό	14687	αεροπλάνο (n) μεταβλητό	11069	αεροπλάνο (n) μεταβλητό
	αεροπλάνο (n) μεταβλητό	12407	αεροπλάνο (n) μεταβλητό	13832	αεροπλάνο (n) μεταβλητό
18472	αεροπλάνο (n) μεταβλητό	10536	αεροπλάνο (n) μεταβλητό		
	αεροπλάνο (n) μεταβλητό	1671	αεροπλάνο (n) μεταβλητό	10567	αεροπλάνο (n) μεταβλητό
17042	αεροπλάνο (n) μεταβλητό	13209	αεροπλάνο (n) μεταβλητό	14780	αεροπλάνο (n) μεταβλητό
14298	αεροπλάνο (n) μεταβλητό	15480	αεροπλάνο (n) μεταβλητό	16878	αεροπλάνο (n) μεταβλητό
	αεροπλάνο (n) μεταβλητό	15358	αεροπλάνο (n) μεταβλητό	16550	αεροπλάνο (n) μεταβλητό
10403	αεροπλάνο (n) μεταβλητό	15480	αεροπλάνο (n) μεταβλητό	12724	αεροπλάνο (n) μεταβλητό
18334	αεροπλάνο (n) μεταβλητό	14686	αεροπλάνο (n) μεταβλητό	12573	αεροπλάνο (n) μεταβλητό
	αεροπλάνο (n) μεταβλητό	11941	αεροπλάνο (n) μεταβλητό	12941	αεροπλάνο (n) μεταβλητό
10303	αεροπλάνο (n) μεταβλητό	16200	αεροπλάνο (n) μεταβλητό		
10354	αεροπλάνο (n) μεταβλητό	12196	αεροπλάνο (n) μεταβλητό	12710	αεροπλάνο (n) μεταβλητό
10351	αεροπλάνο (n) μεταβλητό	15784	αεροπλάνο (n) μεταβλητό	18887	αεροπλάνο (n) μεταβλητό
13799	αεροπλάνο (n) μεταβλητό	10548	αεροπλάνο (n) μεταβλητό	15991	αεροπλάνο (n) μεταβλητό
10186	αεροπλάνο (n) μεταβλητό	15513	αεροπλάνο (n) μεταβλητό	16888	αεροπλάνο (n) μεταβλητό
10818	αεροπλάνο (n) μεταβλητό	13314	αεροπλάνο (n) μεταβλητό	16890	αεροπλάνο (n) μεταβλητό
10821	αεροπλάνο (n) μεταβλητό				
10816	αεροπλάνο (n) μεταβλητό	16257	αεροπλάνο (n) μεταβλητό	18891	αεροπλάνο (n) μεταβλητό
14534	αεροπλάνο (n) μεταβλητό	10981	αεροπλάνο (n) μεταβλητό	16885	αεροπλάνο (n) μεταβλητό
11800	αεροπλάνο (n) μεταβλητό			10427	αεροπλάνο (n) μεταβλητό
11052	αεροπλάνο (n) μεταβλητό	11069	αεροπλάνο (n) μεταβλητό	10426	αεροπλάνο (n) μεταβλητό
	αεροπλάνο (n) μεταβλητό	13832	αεροπλάνο (n) μεταβλητό		
	αεροπλάνο (n) μεταβλητό	10567	αεροπλάνο (n) μεταβλητό		
	αεροπλάνο (n) μεταβλητό	14780	αεροπλάνο (n) μεταβλητό		
	αεροπλάνο (n) μεταβλητό	16878	αεροπλάνο (n) μεταβλητό		
	αεροπλάνο (n) μεταβλητό	16550	αεροπλάνο (n) μεταβλητό		
	αεροπλάνο (n) μεταβλητό	12724	αεροπλάνο (n) μεταβλητό		
	αεροπλάνο (n) μεταβλητό	12573	αεροπλάνο (n) μεταβλητό		
	αεροπλάνο (n) μεταβλητό	12941	αεροπλάνο (n) μεταβλητό		
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	αεροπλάνο (n) μεταβλητό				

Figure 7-5 -- Greek Index

IT aeroporto (m)

10330	aeroporto (m)	13067	alette (f, pl)	15148	altimetro (m) a impulsi
11991	aeroporto (m) di partenza	11768	alette (f, pl) della cappottatura	10007	altimetro (m) assoluto
10182	aerostat (m)	16016	alettone (m) a bordo a fessura	15009	altimetro (m) barometrico
10297	aerostacco (f)	16018	alettone (m) a fessura	10633	altimetro (m) barometrico
10183	aerostazione (f)	16167	alettone (m) a fessura e diruttore	11173	altimetro (m) di cabina
10184	aerostato (m)	14874	alettone (m) a spina	16283	altimetro (m) di precisione
10186	aerostato (m)	17000	alettone (m) della superficie superiore	15355	altimetro (m) registratore
10188	aerostatoelasticità (f)	16166	alettone (m) diruttore	16071	altimetro (m) sonico
10379	aerone (f)	12564	alettone (m) esterno	17095	altissima frequenza (f)
15430	affidabilità (f)	12824	alettone (m) flottante	10423	altitudine (f)
12580	affidabilità (f) estrapolata	12661	alettone (m) guida	10008	altitudine (f) assoluta
14540	affidabilità (f) osservata	12749	alettone (m) ipersostentatore	10622	altitudine (f) astronomica
10618	affidabilità (f) valutata	15481	alettone (m) retrattile	15010	altitudine (f) barometrica
11576	affidamento (m)	15966	alettone (m) rtorto	11189	altitudine (f) corretta
17316	affinazione (f) localizzata a zone	10210	alettoni (m, pl)	11795	altitudine (f) critica
14486	affondata (f)	10545	alettoni (m, pl) anti-imbardata	10118	altitudine (f) dell'orizzonte
18811	affossamento (m)	12043	alettoni (m, pl) differenziali	12692	altitudine (f) di avvicinamento finale
12784	agente (m) alle operazioni di volo	12965	alettoni (m, pl) Frise	11174	altitudine (f) di cabina
10537	agente (m) antistatico	13090	alente (m)	11640	altitudine (f) di crociera
11758	agente (m) di accoppiamento	13448	alente (m) ipersonico	11988	altitudine (f) di densità
14345	agente (m) di distacco dello stampo	14612	alente (m) orbitale	15010	altitudine (f) di pressione
14722	agente (m) di separazione	16783	alente (m) nrmochiato	13528	altitudine (f) di pressione indicata
15416	agente (m) rinforzante	16805	alene (m, pl)	16830	altitudine (f) di transizione
11689	agente (m) vulcanizzatore	13026	allarme (m) del pallonetto	14282	altitudine (f) minima di sicurezza
14017	agganciamento (m)	10863	alteratore (m) basco di volo	14277	altitudine (f) minima di volo
14652	aggetto (m)		strumentale	15212	altitudine (f) radar
15392	aggiustamento (m) di fase	16329	allevatore (m) di sollecitazioni	15934	altitudine (f) simulata
11029	agglomerare	10387	allineamento (m)	16887	altitudine (f) vera
12849	agitazione (f) di frequenza	13226	allineamento (m) con girobussola	10448	altocumulo (m)
10822	agitatore (m) di Banbury	13581	allineamento (m) iniziale alla verticale	13329	alto polimero (m)
18010	agitazione (f) a abbattimento		(giroscopio)	10449	altostato (m)
17260	ala (f)	12487	allineamento (m) sulla verticale	15992	alula (f)
13563	ala (f) a apertura infinita		(giroscopio)	12448	ambiente (m)
11333	ala (f) a canale	10396	allotropia (f)	15859	ambiente (m) a manica di camicia
11983	ala (f) a delta	10451	alluminatura (f)	11660	ambiente (m) controllato
12143	ala (f) a doppio delta	10612	allungamento (m)	12787	ambiente (m) di volo
15289	ala (f) a effetto dinamico	10952	allungamento (m) della palette	10455	ambiguità (f)
10595	ala (f) a freccia	13971	allungamento (m) delle funi di	12122	ammarraggio (m) forzato
13212	ala (f) a gabbiano (o ad M)		sospensione	12120	ammarrare
14381	ala (f) a M	12293	allungamento (m) effettivo	12121	ammarrare con velivolo terrestre
10667	ala (f) a portanza aumentata a getti	10406	almeccante	15870	ammortizzatore (m) (oleo)
12033	ala (f) a rombo	13319	alta altitudine (f)	16045	ammortizzatore (m) di vibrazione
15967	ala (f) asimmetrica	13316	alta frequenza (f)	11902	ammortizzatore (m) di vibrazione
17286	ala (f) a W	16172	alterazione (f) segnali	14561	ammortizzatore (m) oleopneumatico a
11790	ala (f) crescente	13301	altezza (f)		telescopio
12481	ala (f) di monoplano equivalente	10424	altezza (f) (astronomica)	11134	ammortizzatori (m, pl) di fermo (pl)
10157	ala (f) roccina	15028	altezza (f) barometrica	14357	a molti moti
11777	ala (f) piegata a gomito	11209	altezza (f) caratteristica della calotta	10961	ammortizzatore (m) della pala
16564	ala (f) rastremata	17055	altezza (f) cinetica	10461	ampiezza (f) (astronomica)
11416	ala (f) squadrata alle estremità	11804	altezza (f) critica	10463	analemma (m)
16412	ala (f) supercritica	12235	altezza (f) del canale radio troposferico	12705	analisi (f) ad elementi finiti
12886	ala (f) volante	11279	altezza (f) della base delle nubi con una	16350	analisi (f) delle sollecitazioni
11778	albero (m) a manovelle		copertura del cielo di 4/8	11620	analisi (f) per contatto
15612	albero (m) del rotore	16015	altezza (f) della fessura	12045	analisi (f) termica differenziale
11415	albero (m) di salita	11436	altezza (f) delle nubi	10484	anametico
10427	alcalosa (f) dell'urna per la quota	17180	altezza (f) dell'onda	16916	anello (m) all'estremità delle palette
10426	alcalosa (f) per la quota	13107	altezza (f) dello spicchio		della turbina
10381	alcid (m)	11944	altezza (f) di decisione	10900	anello (m) benzamico
10232	al controllo aereo (controllore)	12466	altezza (f) di equilibrio	11143	anello (m) bruciatore
14927	alcool (m) di polivinile	12205	altezza (f) di lancio	13109	anello (m) dello spicchio
16813	aletta (f) al bordo di uscita	13397	altezza (f) di trascinamento	13789	anello (m) di attacco
12875	aletta (f) a ripiegamento	15686	altezza (f) di sicurezza	16003	anello (m) di centrifugazione
17257	aletta (f) a T per il vento	15552	altezza (f) di sollevamento	11562	anello (m) di concentrazione
16500	aletta (f) compensatrice	14691	altezza (f) di spiegamento del	12529	anello (m) di deviazione dello scarico
10798	aletta (f) compensatrice		paracadute	14513	anello (m) di palette direzionali
13049	aletta (f) compensatrice automatica	13106	altezza (f) in estensione dello spicchio	13780	anello (m) di ritengo della guarnizione
11668	aletta (f) compensatrice controllata	15734	altezza (f) limite di separazione verticale	13387	anello (m) di sospensione
16185	aletta (f) compensatrice elastica		dagli ostacoli	14001	anello (m) di sospensione
16874	aletta (f) correttiva di assetto	14541	altezza (f) limite minimo di separazione	15548	anello (m) di strappamento
16516	aletta (f) di coda		verticale dagli ostacoli	15749	anello (m) di tenuta
13772	aletta (f) di controllo	16175	altezza (f) locale	13036	anello (m) di tenuta del gas
14671	aletta (f) di estremità del sacco	14238	altezza (f) metacentrica	17131	anello (m) di vortici
11707	aletta (f) di refrigerazione	14996	altezza (f) predominante (incognizione	15897	anello (m) esterno del disco
12862	aletta (f) direttiva		aerea)	10970	anello (m) esterno delle palette
16831	aletta (f) di transizione	17103	altezza (f) virtuale	16913	anello (m) esterno rotante di turbina
13424	aletta (f) idrodinamica	10422	altimetria (f)	16914	anello (m) esterno statico di turbina
		10420	altimetro (m)	16915	anello (m) esterno statico di turbina

Figure 7-6 -- Italian Index

PO

aileron (m) retráctil

15481 aileron (m) retráctil	10622 altitude (f) astronómica	15860 amortecedor (m) de choque
10210 ailerons (m, pl)	15010 altitude (f) barométrica	16328 amortecedor (m) de deformações
10545 ailerons (m, pl) anti-guivada	11168 altitude (f) calibrada	15857 amortecedor (m) de shimmy
12043 ailerons (m, pl) diferenciais	11795 altitude (f) crítica	16048 amortecedor (m) de vibrações
12965 ailerons (m, pl) frisa	11804 altitude (f) crítica	11902 amortecedor (m) de vibrações
12661 aileron (m) simulador de esforço	12892 altitude (f) de aproximação final	15866 amortecedor (m) elástico
14874 aileron (m) tampão	11174 altitude (f) de cabine	14561 amortecedor (m) oleopneumático telescópico
16166 aileron (m) tipo spoiler	11840 altitude (f) de cruzeiro	11901 amortecedor
16167 aileron (m) tipo spoiler fendido	11844 altitude (f) de decolagem	11903 amortecimento (m)
10206 ajuda (f) à navegação	11988 altitude (f) de densidade	10134 amortecimento (m) aerodinâmico
14754 ajuda (f) à penetração	12482 altitude (f) de oxigénio equivalente	11798 amortecimento (m) crítico
15860 ajuda (f) navegacional de curto alcance	15010 altitude (f) de pressão	11743 amortecimento (m) de Coulomb
10558 ajuda (f, pl) à aproximação	13528 altitude (f) de pressão indicada	17099 amortecimento (m) de vibrações
13827 ajuda (f, pl) para aterragem	15212 altitude (f) de radar	16373 amortecimento (m) estrutural
13026 alarva (m) de seco de gás	15314 altitude (f) de restabelecimento à potência nominal	16556 amortecimento (m) tangencial
13101 alavanca (f) de controlo de avanço	15866 altitude (f) de segurança	16130 amostra (f)
13917 alavanca (f) de libertação dos cabos de prisão das pernas	16830 altitude (f) de transição	15679 amostra (f)
13174 alavanca (f) de segurança no solo	13319 altitudes (f) elevada	15298 amostra (f) aleatória
14825 alavanca (f) do passo	13823 altitude (f) indicada	15930 amostra (m) aleatória simples
10426 alcalose (f) de altitude	14541 altitude (f) limite de franqueamento de obstáculos	10913 amostra (f) com erro sistemático
10427 alcalina (f) de altitude	14282 altitude (f) mínima de segurança	16336 amostra (f) estratificada
15303 alcance (m)	14277 altitude (f) mínima de voo	15687 amostragem (f)
13608 alcance (m) de entrada (giroscópio, acelerómetro)	15314 altitude (f) nominal	11130 amostragem (f) à granel
12264 alcance (m) dinâmico (giroscópio, acelerómetro)	16934 altitude (f) simulada	10914 amostragem (f) com erro sistemático
15991 alcance (m) inclinado	16887 altitude (f) verdadeira	10039 amostragem (f) de acção
14340 alcance (m) mais económico	10448 altocúmulo (m)	12149 amostragem (f) dupla
14184 alcance (m) máximo eficaz	10449 altostrato (m)	13062 amostragem (f) geométrica
14595 alcance (m) operacional	13301 altura (f)	14377 amostragem (f) por encaixe
12485 alcance (m) radico em atmosfera calma	11209 altura (f) característica de colite	14402 amostragem (f) por encaixe
15859 alcance (m) visual numa pista	12235 altura (f) da camada reflectora	15813 amostragem (f) sequencial
10381 alidade (m)	13106 altura (f) de extensão do gomo	16494 amostragem (f) sistemática
14927 álcool (m) polivinílico	18015 altura (f) da fenda	15451 amostra (m) representativa
15290 aleatório	11436 altura (f) das nuvens	16493 amostra (f) sistemática
15296 aleatorização (f)	14691 altura (f) de desdobramento dum pára-quedas	10461 amplitude (f)
15670 alfinete (m) de segurança	12486 altura (f) de equilíbrio	12452 amplitude (f) ambiental
11707 alfinete (f) de enfiamento	12204 altura (f) de largada	15306 amplitude (f) de carga
13502 alfinete (f) de impulsão	12205 altura (f) de largada	15307 amplitude (f) de tensão
16753 alfinete-guia (f) torçãol	17180 altura (f) de onda	16359 amplitude (f) de tensão
10387 alinhamento (m)	13397 altura (f) de parir	15084 amplitude (f) do processo
12487 alinhamento (m) (giroscópio)	15028 altura (f) de pressão	14213 amplitude (f) média
13581 alinhamento (m) inicial (giroscópio)	15552 altura (f) de subida	10997 amplitude (f) média
13226 alinhamento (m) por giro-bússola	17085 altura (f) dinâmica	10463 analema (m)
16361 elevação (f) de tensões	13107 altura (f) do gomo	16350 análise (f) de tensões
13988 alívio (m) das cargas	15734 altura (f) limite de franqueamento de obstáculos	12705 análise (f) por elementos finitos
16362 alívio (m) de tensões	10239 altura (f) limite na aproximação de aeronaves por instrumentos	12045 análise (f) térmica diferencial
11550 alívio (m) do compressor	14238 altura (f) metacéntrica	10464 anemómetro
16110 alma (f) de longarina	14996 altura (f) predominante (reconhecimento aéreo)	11557 andar (m) de compressor
11677 almofada (f)	17103 altura (f) virtual	11475 anel (m) colectar
10773 almofada (f) das costas	10451 aluminizar (m)	12527 anel (m) colectar de escape
10276 almofada (f) de ar	16589 alvo (m)	15897 anel (m) de blindagem
14070 almofada (f) lombar	10107 alvo (m) sério	14001 anel (m) de carga
10406 almucantar	15231 alvo (m) radar	11562 anel (m) de concentração
10407 alodrom	16784 alvo (m) tabocado	12336 anel (m) de ejector
10408 alodine	12122 amarração (f) forçada	12529 anel (m) deflector de escape
10612 alongamento (m)	12120 amarrar (VAAs)	16179 anel (m) de injectores
11667 alongamento (m) controlado	12121 amarrar em emergência	12153 anel (m) de injectores duplo
10952 alongamento (m) da lâmina	11098 amarra (f)	10358 anel (m) de sangria de ar
12293 alongamento (m) efectivo	15522 amarração (f) (pára-quedas)	15717 anel (m) de Schuler
10396 alotropia (f)	16517 amarração (f) de cauda	15749 anel (m) de vedação
10388 alquid-plásticos (m, pl)	11299 amarração (f) de ponto central	17131 anel (m) de vórtices
13316 alta frequência (f)	10284 amarração (f) de uma aeronave	14513 anel-guia (m) de tuberia
14148 alternativa (f) manual ('overide')	11995 amarra (f) de desdobramento	14445 anel NOL (m)
10422 altimetria (f)	12448 ambiente (m)	11143 anel (m) queimador
10420 altímetro (m)	15859 ambiente (m) de trabalho normal	16914 anel (m) vedante de turbina
10007 altímetro (m) absoluto	12787 ambiente (m) de voo	10468 anemómetro (m)
10633 altímetro (m) barométrico	10455 ambiguidade (f)	10469 anemómetro (m)
15009 altímetro (m) barométrico	10459 amito-plásticos (m, pl)	13391 anemómetro (m) de fio quente
11173 altímetro (m) de cabine (pressurizada)	10457 amnésia (f)	13859 anemómetro (m) laser
15148 altímetro (m) de impulsos	10961 amortecedor (m) de pé	10317 anemómetro (m) portátil
15365 altímetro (m) registador	13613 amortecedor (m) de atraso	11018 anfibio (m) barco
16071 altímetro (m) sonoro		10412 ângulo (m) alfa-um
10423 altitude (f)		13112 ângulo (m) ao vértice do gomo
10006 altitude (f) absoluta		10759 ângulo (m) azimutal
10424 altitude (f) astronómica		10953 ângulo (m) azimutal de pé
		16660 ângulo (m) de alavanca de acção
		13312 ângulo (m) de hélice

Figure 7-7 -- Portuguese Index

TU

aktüatör disk teorisi

10079	aktüatör disk teorisi	15959	altı elemanlı balans	10468	anemograf
11754	akupunktur motor güç birimi	15959	altı kollu terazî	10469	anemometre
10051	akustik dağılım	10416	alternatif gerilme	10317	anemometre
10052	akustik emisyon	10415	alternatif yük	10470	aneroid barometre
10058	akustik kılınma	16386	altı grup	10471	aneroid kapsül
10057	akustik malzeme	10420	altı metre	13489	ani hava desteği
18081	akustik pamandıra	10421	altı metre ayan	10499	anilin formaldesit reçinesi
10059	akustik spektrum	13523	altımetrede okunan yükseklik	15109	ani nitrik oksit
10060	akustik titreşim	15981	altı mahmuz	16438	ani yükselme
10053	akustik uyarma	10448	altokümürlüs	10870	anma aşığı
10056	akustik yakıtım	10449	altotratus	14446	anma alanı
10054	akustik yorulma	16972	alttan gözüken kordon kaynağı boncuğu	14447	anma çapı
10055	akustik yorulma deneyi	16397	alt yüzey	14448	anma değeri
13346	akkoyma	10450	alüminyum alaşımları	10867	anma ölçüsü
12418	akından yanma	10451	alüminyum kaplama	15314	anma yüksekliği
13283	akın direnci	10451	alüminyum kaplama	10512	anodik film
16944	alaca karanlık	10407	alüminyumun krom kaplanması	15661	anodik kaplama (korunma)
13848	alanın inis sahası	15650	ambale süresi	10511	anodik temizleme
10585	alan emişi	15652	ambale süresi (cayroda)	10513	anodik temizleme
12670	alan füze kontrolü	10456	Amerika elemanı	12620	anormal ak kaldırma gücü
10581	alan seyruşeleri	10456	Amerika astronomi takvimi	10514	anotlama
16608	alan trafiginin düzenlenmesi	17018	ambik bot	10516	A-N radyo renç
12669	alan verileri	10460	ambik upak	10517	anten
10382	alarm servisi	10458	amino plastikleri	10105	anten
10400	alaşım	10457	amin reçinesi	16485	anten genişliğini artırma cihaz
10401	alaşımın celik	10459	amonyak enjeksiyonu	15276	anten kaportası
14059	alçak ısı direnci	11902	amortör	15276	anten kubbesi
14058	alçak basınç lamner malzemesi	15860	amortör	10527	antifriz
14047	alçak bulutlar	15862	amortör kordonu	10528	antigravite
14055	alçak ergime noktalı alaşımlar	15870	amortörlü dikme	10532	antioksidan
16398	alçak hararetili işleme	10461	amplitüd	10533	antiozonant
11486	alçak uçup gürültüsü	10462	AMVER sistemi	10534	antiradyasyon roket
14365	alçak uçup gürültüsü	16402	am ısı yükselmesi	13318	antisekon
13636	aletli iniş sistemi (ILS)	13628	anında okuma	10523	antisekonluk hareketin yayılması
13088	aletli iniş sistemi için iniş yolu düzenekleri	14117	ana bağlama teli	10522	antisiklonik sirkülasyonun dağılımı
13639	aletli pist	14116	ana boy kırışı	10537	antistatik madde
13633	aletli pist	14113	ana devre	10518	antropometrik
13638	aletli seyruşeleri	14122	ana dişi	10519	antropometrik manken
13634	aletli uçup	14115	ana dişli kutusu	10546	aperyodik pusula
13635	aletli uçup kaideleri	12287	anaför	10571	apron
13637	aletli uçup gerektiren hava şartları	16474	anaför cihazı	10572	apron aydınlatma ışığı
13631	aletli yakıtıma	16816	anaför engellemesi	12803	arıza
12746	alev borusu	12291	anaför hızı	13829	arıza anı
12738	alev cephesi	16473	anaför hızı	12807	arıza dağılımı
11494	alev dalgası	12288	anaför hızı	12800	arıza emniyeti
12744	alev dengeleyicisi	17138	anaför hızı	12801	arıza emniyeti yapı
12742	alev dayanıklı	16476	anaför hızı	12802	arıza emniyet sistemi
12737	alev güzevici	12292	anaför hızı	12808	arıza etkisi
12757	alevin tepmesi	12290	anaför hızı	12809	arıza frekansı
12736	alev kesici	13035	ana gaz hortumu	12810	arıza frekans dağılımı
12759	alevlenme noktası	15069	ana gerilmeler	11932	arıza giderilmesi
12760	alevlenmeye karşı dayanıklı	14119	ana gövde	11933	arıza giderme sahası
12736	alev perdesi	15060	ana gözetleme radarı	12159	arıza giderme zamanı
12743	alev püskürtme	16892	ana hava yolu	12605	arıza kriteri
12739	alev sertleştirilmesi	13702	anahtar	16616	arızalı arızide alçak uçup rota radarı
12736	alev süpür	14171	ana istasyon	15680	arızalı numune oranı
13077	alev süpür	15086	ana ivme eksenli	14216	arızalar arasında ortalama zaman (MTBF)
12740	alev tutucu	10864	ana kaldırma kuvveti	12578	arızalar arası ortalama zamanın tayını
12745	alev tuzağı	16767	ana kaldırma kuvveti	12611	arıza nedeni
12738	alev yuzu	15964	ana kolun takımı	11571	arıza olasılık kısıtlı
10411	alfa demiri	15465	analiz cihazı	12613	arıza olasılık yoğunluğu
10409	alfa selulozu	14118	ana linyon	12614	arıza olasılık dağılımı
10410	alfa tipi menteşe	14114	ana mang tulumu	12616	arıza oranı
10412	alfa 1 acısı	10464	anametrik	12617	arıza oranı ivme faktörü
10383	alfin lastikleri	10465	anametrik hesaplama	12615	arıza oranı
10384	Alfordlup	14112	ana maydan	16724	arızalı çalışma süresi
10404	alit plastikleri	11778	ana mil	16724	arızalı geçen süre
10405	alit reçineleri	11243	ana noktalara yönelme	12604	arıza sebebi
16805	ahze ruzgârları	15088	ana onleme gücü	16883	arıza tesbiti
10388	ahkid plastikleri	14118	ana parçaları	12612	arızalı bekleten etki
10389	ahkid reçineleri	15058	ana radar	12606	arıza yoğunluğu
10396	allotropi	14120	ana radyal dikme	12901	arıza yuzdesi
10406	almukantar	10866	ana referans atmosferi	13674	ara ısıtıcı
10408	alodin	14121	ana rotor	15415	ara ısıtıcı
10408	alokrom	13787	ana uzunluk (paragütte)	13681	ara boylama kırışı
10407	alokrom	14170	ana ve tali rot grubu	17053	araç
		15059	ana yapı		

Figure 7-8 -- Turkish Index

ES

aislante (m) de golpes

15866	aislante (m) de golpes	14456	aleación (f) no tratable térmicamente	12482	altitud (f) equivalente en oxígeno
11932	aislar los errores (fallas)	13298	aleación (f) templable	13523	altitud (f) indicada
13987	ajustador (m) de carga	15290	aleatorio	14282	altitud (f) mínima de seguridad
10387	ajuste (m)	11099	aleccionamiento (m)	14277	altitud (f) mínima de vuelo
15892	ajuste (m) en caliente	14874	aleron (m) con ranura	15314	altitud (f) nominal
12882	ajuste (m) forzado	17000	aleron (m) de estrados	15212	altitud (f) real
17260	ala (f)	12661	aleron (m) de sensación	15934	altitud (f) simulada
11333	ala (f) acanalada	16016	aleron (m) en reborde de ranura	16887	altitud (f) verdadera
10157	ala (f) peroisocina	10210	alerones (m) pl	10448	altocumulus (m)
16564	ala (f) alada	12043	alerones (m) pl diferenciales	10449	alotratulus (m)
10944	alabe (m)	10545	alerones (m) pl Frise	13301	altura (f)
15895	alabe (m) con talon	12965	alerones (m) pl Frise	12391	altura (f)
11548	alabe (m) de compresor	16166	aleron (m) spoiler	10008	altura (f) absoluta
14508	alabe (m) de tobera	12564	aleron (m) externo	15028	altura (f) barométrica
18905	alabe (m) de turbina	12824	aleron (m) flotante	11209	altura (f) característica de campana
11114	alabe (m) de turbina	15966	aleron (m) oblicuo	11804	altura (f) crítica
16476	alabe (m) de turbulencia	16018	aleron (m) ranurado	11944	altura (f) de decisión
14514	alabe director (m)	16167	aleron (m) ranura spoiler	14691	altura (f) de despliegue
13772	alabe (m) director de chorro	15481	aleron (m) retráctil	12466	altura (f) de equilibrio
16282	alabe (m) tipo	12749	aleron (m) tipo flap	11920	altura (f) de guarda
16753	alabe (f) guía toroidal de la toma de aire	16170	aleta (f)	13397	altura (f) de guarda
11116	alabeo (m)	16516	aleta (f) de cola	11438	altura (f) de la base de las nubes
17166	alabeo (m) negativo	11766	aleta (f) del capot	13108	altura (f) del ancho de paso
17165	alabeo (m) positivo	11688	aleta (f) de mando	12204	altura (f) de lanzamiento
13210	alabes (m) pl directores	11707	aleta (f) de refrigeración	12205	altura (f) de lanzamiento
13592	alabes (m) pl directores de entrada lo de toma de aire	12875	aleta (f) plegable	12235	altura (f) del radióconduto troposférico
11555	alabes (m) directores de entrada del compresor	13067	aletas (f) pl de capot	17180	altura (f) de onda
15594	alabes (m) pl directores giratorios	15144	aletas (f) pl de escape	13107	altura (f) de paño
12536	alabes (m) pl guías del escape	15359	aletas (f) pl de recirculación	16015	altura (f) de ranura
16564	ala (f) con estrechamiento	13125	alimentación (f) por gravedad	15666	altura (f) de seguridad
13563	ala (f) de envergadura infinita	13226	alineación (f) con giro brusco lo geomagnética	15552	altura (f) de sustentación
13212	ala (f) de gaviota	13581	alineación (f) inicial (giro)	17055	altura (f) dinámica
12481	ala (f) de monoplano equivalente	15990	alineación (f) oblicua	13319	altura (f) elevada
11416	ala (f) de punta recortada	16805	alisos (m) pl	10239	altura (f) límite de aproximación con instrumentos (AAL)
11983	ala (f) en delta	16329	alivador (m) de deformaciones	15734	altura (f) límite de franqueamiento de obstáculos
12143	ala (f) en doble delta	13988	alivio (m) de las cargas	14541	altura (f) límite de franqueamiento de obstáculos
10595	ala (f) en flecha	16312	almacenable	14238	altura (f) metacentrica
13212	ala (f) en M	17058	almacenaje (m) de datos de velocidad	14996	altura (f) predominante (reconocimiento aéreo)
14381	ala (f) en M	11737	alma (f) cortante corrugada	17103	altura (f) virtual
11790	ala (f) en media luna	10960	alma (f) de alabe	10451	alumizar (m)
17286	ala (f) en W	16115	alma (f) del larguero	13856	amarre (m)
15967	ala (f) oblicua	10406	almicantarat (m)	11299	amarre (m) central
11777	ala (f) quebrada	10773	almohadilla (f) de espalda	12062	amarre (m) de bote
16372	alargadera (f)	14070	almohadilla (f) lumbar	16517	amarre (m) de popa
11181	alargadera (f)	10408	alodín	10264	amarre (m) de una aeronave
13612	alargamiento (m)	17232	aloyamiento (m) de rueda	12448	ambiente (m)
12701	alargamiento (m) fuselaje	14699	aloja (f) paracaídas	11660	ambiente (m) controlado
10952	alargamiento (m) del alabe	10396	alotropía (f)	12787	ambiente (m) en vuelo
12293	alargamiento (m) efectivo	13316	alta frecuencia (f)	15859	ambiente (m) respirable y confortable
12033	ala (f) romboidal	14054	alta frecuencia (f) mínima útil	10455	ambigüedad (f)
10687	ala (f) soplada (hipersustentador)	10422	altimetría (f)	12122	amerizaje (m) forzado
16412	ala (f) supercrítica	10420	altímetro (m)	12120	amenazar
12866	ala (f) volante	10007	altímetro (m) absoluto	12121	amenazar (un avión terrestre)
10428	alcalosis (f) de altitud	10833	altímetro (m) barométrico	12822	ambio (m) de flotadores
10427	alcaluria (f) de altitud	15009	altímetro (m) barométrico	10458	aminoplasticos (m) pl
10391	alcance (m) de fin de combustión	11173	altímetro (m) de cabina	10457	aminopresina (f)
12485	alcance (m) equivalente con viento en calma	16071	altímetro (m) de sonido	10134	amortiguación (f) aerodinámica
14595	alcance (m) operacional	15211	altímetro (m) radar	15262	amortiguación (f) de propagación radioeléctrica
10381	alcid (m)	15355	altímetro (m) registrador	17099	amortiguación (f) de vibraciones
10407	alcocrom	10423	altitud (f)	15860	amortiguador (m)
14927	alcohol (m) polivinílico	10424	altitud (f) lastronomical	16045	amortiguador (m)
10400	aleación (f)	10008	altitud (f) absoluta	11902	amortiguador (m)
11714	aleación (f) cobre berilio	10622	altitud (f) astronómica	13813	amortiguador (m) de arrastre
11845	aleación (f) criogénica	15010	altitud (f) barométrica	10961	amortiguador (m) de pala
10450	aleaciones (f) pl de aluminio	15028	altitud (f) barométrica	15857	amortiguador (m) de shimmy
14055	aleaciones (f) pl de bajo punto de fusión	11189	altitud (f) corregida	14561	amortiguador (m) oleoneumático
14088	aleaciones (f) pl de magnesio	11795	altitud (f) crítica	11903	amortiguamiento (m)
14415	aleaciones (f) pl de níquel	12692	altitud (f) de aproximación final	11798	amortiguamiento (m) crítico
16741	aleaciones (f) pl de titanio	11174	altitud (f) de cabina	16373	amortiguamiento (m) estructural
13009	aleaciones (f) pl fusibles	11840	altitud (f) de crucero	11743	amortiguamiento (m) por fricción seca
13294	aleaciones (f) pl resistentes al calor	11988	altitud (f) de densidad	11901	amortiguar
12929	aleación (f) mecanizable	15013	altitud (f) de presión	11743	amortiguamiento (m) de Coulomb
		13528	altitud (f) de presión indicada		
		15314	altitud (f) de restablecimiento a la potencia nominal		
		16830	altitud (f) de transición		

Figure 7-9 -- Spanish Index

RU

АКТИВНОЕ САМОНАВЕДЕНИЕ (n)

- 10073 активное самонаведение (n)
 10072 активное самонаведение (n)
 11313 акт (m) соответствия
 10058 акустическая рефракция (f)
 10054 акустическая усталость (f)
 10052 акустическая эмиссия (f)
 10059 акустический спектр (m)
 10053 акустическое возбуждение (n)
 10060 акустическое колебание (n)
 10051 акустическое рассеивание (n)
 13611 акустическая разница (f) между
 верным и низким значениями
 диапазона ввода
 14644 акустическая разница (f) между
 верным и низким значениями
 диапазона вывода
 10451 апитирование (n)
 10388 аплитные пластмассы (pl)
 10389 аплитные смолы (pl)
 10405 аплитовые смолы (f)
 10404 аплитовые пластмассы (pl)
 10396 аплотрония (f)
 10408 аплудин (m)
 10407 аплорон (m)
 10381 аплотид (m)
 10406 аплумкантират (m)
 10411 аплфа-железо (n)
 10409 аплфа-целлюлоза (f)
 10383 аплфин-каучук (pl)
 10450 аплуминирующие сплавы (pl)
 10451 аплуминирование (n)
 10456 американская эфемериды (f)
 10458 аминные пластмассы (pl)
 10457 аминсмола (f)
 15860 амморизатор (m)
 11134 амморизаторы (pl)
 15870 амморизационная стойка (f)
 15862 амморизационный шпур (m)
 15360 амморизирующая игла (f)
 11877 амморизирующая камера (f)
 16045 амморизирующая прокладка (f)
 15866 амморизирующая установка (f)
 15866 амморизирующее устройство (n)
 10461 амплитуда (f)
 10463 аналемма (f)
 12598 анализ (m) влияния нескольких
 факторов
 16350 анализ (m) напряжений
 10464 анамерический
 10465 анаметрический определение (n)
 данная
 13247 ангар (m)
 15651 ангар (m) для гонки двигателей
 15334 ангар (m) для дежурных самолетов
 10468 анемограф (m)
 10469 анемометр (m)
 10317 анемометр (m)
 13859 анемометр (m) на пазерах
 10471 анеродная коробка (f)
 10470 анеродный барометр (m)
 10501 анизотермия (f)
 10503 анизотропия (f)
 10502 анизотропный слоистый пластик (m)
 10500 анизопластичность (f)
 10499 анилинформальдегидная смола (f)
 14393 АНО (abbr)
 10514 анодирование (n)
 10511 анодная очистка (f)
 10512 анодная пленка (f)
 10513 анодное травление (n)
 10515 аносия (f)
 10517 антенна (f)
 10105 антенна (f)
 11256 антенна (f) Кассегрейна
 12727 антенна (f) с неподвижной рамкой
 13748 антенная система (f) типа янус
 10528 антигравитация (f)
 10520 антиагглюлянт (m)
 17313 антикоррозийная грунтовка (f) с
 большим содержанием цинка
 13465 антиобледенитель (m)
 10533 антиозонант (m)
 10532 антиокислитель (m)
 10532 антиоксидант (m)
 10544 антипассаты (pl)
 10542 антисимметричный флаттер (m)
 10527 антифриз (m)
 10522 антициклонез (m)
 10523 антициклолиз (m)
 10524 антициклон (m)
 13318 антициклон (m)
 10518 антропометрия (f)
 10519 антропоморфный манекен (m)
 14611 апельсинная корка (f)
 10546 аперидический компас (m)
 10550 аплотай (m)
 10551 аплотайная импульсная система (f)
 13157 аппарат (m) на воздушной подушке
 10279 аппарат (m) на воздушной подушке
 10287 аппаратура (f) для наблюдения
 поверхности аэродрома
 13199 аппаратура (f) наземной станции
 наведения
 14397 аппендикс (m)
 11758 аппаратура (f)
 16360 характеристика (f) цикла
 напряжений
 10586 арифметическое среднее (n)
 10589 ароматическое топливо (n)
 11184 аресмирующее устройство (n)
 10638 ассиметрическая нагрузка (f)
 15965 ассиметричное распределение (n)
 10637 ассиметричный флаттер (m)
 15968 ассиметрия (f)
 16393 ассимптотически затухающее
 возмущение
 13869 ассимптотически нарастающее боковое
 движение (n)
 14022 ассимптотически нарастающее
 продольное движение (n)
 10607 аскогиро (n)
 10622 астровисота (f)
 11280 астроирицательное наведение (n)
 16285 астроирицательное наведение (n)
 15986 астрокмплас (m)
 10623 астрокмплас (m)
 10607 астрокмплас гироскоп (m)
 10624 астрокупол (m)
 11281 астронавигация (f)
 10424 астрономическая высота (f)
 10629 астрономическая долгота (f)
 10631 астрономическая параллель (f)
 10628 астрономическая широта (f)
 10626 астрономические сутки (pl)
 10633 астрономический азимут (m)
 10630 астрономический веридан (m)
 16138 астрономический треугольник (m)
 10627 астрономический экватор (m)
 10632 астрономическое положение (n)
 10635 астрономия (f)
 10636 астроориентатор (m)
 10636 астропеленгатор (m)
 10639 атактический (adj)
 10022 ателентаз (m) вызванный ускорением
 10641 атмосфера (f)
 16234 атмосфера (f) со стандартным
 градиентом модуля преломления
 10643 атмосферная рефракция (f)
 10644 атмосферная турбулентность (f)
 10642 атмосферное давление (n)
 15256 атмосферный волновод (m)
 15256 атмосферный волнопроводящий
 спой (m)
 10645 атомногетеродная сварка (f)
 10646 атомное время (n)
 10664 аудиометр (m) шумомер (m)
 10674 аустенит (m)
 10676 аустенитизация (f)
 10675 аустенитная сталь (f)
 10671 аусформинг (m)
 10683 аутокинетическая иллюзия (f)
 10684 аутокинетическая иллюзия (f)
 10549 афилатическая проекция (f)
 10191 афринная деформация (f)
 10047 ацетиленовая сварка (f)
 14658 ацетилено-кислородная сварка (f)
 10109 аэроартроз (m)
 10110 аэробаллистика (f)
 10112 аэроботаника (f)
 10190 аэробуксировочный полет (m)
 10146 аэродан (m)
 13449 аэродинамика (f) гиперзвуковых
 скоростей
 10130 аэродинамическая балансировка (f)
 10129 аэродинамическая балансировка (f)
 10141 аэродинамическая жесткость (f)
 10129 аэродинамическая компенсация (f)
 10130 аэродинамическая компенсация (f)
 10144 аэродинамическая крутка (f)
 14939 аэродинамическая ошибка (f)
 12662 аэродинамическая перегорodka (f)
 10142 аэродинамическая поверхность (f)
 10152 аэродинамическая поверхность (f)
 12259 аэродинамическая подъемная сила (f)
 10138 аэродинамическая ракета (f)
 10135 аэродинамическая сила (f)
 11651 аэродинамическая сила (f)
 действующая на поверхность
 управления
 17258 аэродинамическая труба (f)
 13221 аэродинамическая труба (f) для
 изучения влияния порывов ветра
 12925 аэродинамическая труба (f) для
 испытаний свободнопоточных
 моделей
 12934 аэродинамическая труба (f) для
 исследований свободнопоточных
 моделей
 11424 аэродинамическая труба (f)
 замкнутого типа
 11012 аэродинамическая труба (f)
 кратковременного действия
 14068 аэродинамическая труба (f)
 кратковременного действия тип
 Пюдава
 14050 аэродинамическая труба (f) малой
 плотности
 12517 аэродинамическая труба (f)
 неавихренного потока типа Званса
 11632 аэродинамическая труба (f)
 непрерывного действия
 13689 аэродинамическая труба (f)
 периодического действия
 12067 аэродинамическая труба (f) прямого
 действия
 13290 аэродинамическая труба (f)
 работающая на нагнетанном воздухе
 11533 аэродинамическая труба (f)
 работающая на нагнетанном воздухе
 11429 аэродинамическая труба (f) с
 закрытой рабочей частью
 15490 аэродинамическая труба (f) с
 обратным каналом
 15488 аэродинамическая труба (f) с
 обратным каналом
 16401 аэродинамическая труба (f) с
 отсасыванием
 13213 аэродинамическая труба (f) с тупой
 встречающейся моделью на встречном
 потоке

Figure 7-10 -- Russian Index

7.4 ACRONYMS AND ABBREVIATIONS

The Acronyms and Abbreviations section has a two-column format. The alphabetically sorted acronym or abbreviation is followed by its meaning. In the event that the same character string has more than one definition, each is separated by a semicolon. The section includes the more common acronyms and abbreviations used in aeronautics in addition to those used in the Definition and Translation Section of the dictionary. A sample page is shown in Figure 7-11.

8. EDITORIAL REVISION

With the first set of page proofs in hand, the Committee, in consultation with its technical editors and translators, had its first opportunity to look at the dictionary as it was to be published, that is, in the format that combined the English definitions with the respective translations. It was apparent that there was a number of anomalies and errors in the definitions and translations. It was also apparent that the dictionary needed a single unifying editorial hand to control editorial quality, consistency, and accuracy.

Thus, in November 1977, the Sub-Committee decided to contract with two very competent technical editors and translators in London, Miss K. Mews and Miss E. C. Pike, who would be responsible for reviewing the entire dictionary and integrating their amendments with changes suggested by contributors.

At that time it was estimated that the task would not take more 2 or 3 months, and publication in the late spring of 1978 was still anticipated.

In March 1978 the contractors transmitted to AGARD a detailed analysis of the errors, omissions, and inconsistencies they had found. Problems were classified under a variety of headings ranging from simple typing errors to gross defects in the translation of terms. It was estimated that as many as half the terms would have one or more corrections.

The contractors delivered the opinion that "the general impression is that there has been no overall coordination of the terms within any of the countries and certainly, from the variety of meanings given among the various languages for any one term, it would be clear to anyone consulting the dictionary at its present stage that the terms had not been checked or coordinated to ensure that each language is expressing the same meaning." The contractors added that "In view of the number of fields covered it is understandable to have had several

ACT

ACT Active Control Technology Activation Automatic Checkout Techniques
 ACTF Altitude Control Test Facility
 ACU Acceleration Control Unit Air Conditioning Unit
 ACV Air Cushion Vehicle
 ACW Air Control and Warning System Aircraft Control and Warning
 AC&W Aircraft Control and Warning
 ACWS Aircraft Control & Warning System
 AD Aerodrome Air Defence
 A/D Analog(D) to Digital Arm/Destruct
 ADA Air Defense Area
 ADAC Automated Direct Analog(D) Computer
 ADAM Air Deflection and Modification
 ADAR Advanced Design Array Radar
 ADA Systems Action Data Automation Systems
 ADC Airborne Digital Computer Automatic Digit Control Air Data Computer Aerodrome Control
 ADCC Air Defense Control Center
 ADF Automatic Direction Finder Automatic Direction Finding (Equipment)
 ADI Attitude Director Indicator Automatic Direction Indicator
 ADH Automated Data Handling
 ADISP Aeronautical Digital Information System Panel
 ADIZ Air Defense Identification Zone
 ADL Armament Datum Line
 ADM Air Defense Missile
 ADP Acceptance Data Package Automatic Data Processing
 ADPE Automatic Data Processing Equipment
 ADPLL All Digital Phase Locked Loop
 ADR Advisory Route
 ADRAN Advanced Digital Ranging System
 ADRS Automatic Data Reporting System
 ADS Air Defence System Air Defence Ship Accessory Drive System Air Data System Advanced Data System
 ADSEL Address Selection Beacon System
 ADSS Aircraft Damage Sensing System
 ATTU Auxiliary Data Translator Unit
 ADV Air Defence Variant
 adv Advanced
 ADZ Air Defence Zone
 AE Air Electrical Auxiliary Equipment
 A&E Armament and Electronics
 AEA Abort Electronic Assembly
 AEB Air Equipment Bay
 AEDS Atmospheric Electric Detection System
 AEEC Airlines Electronic Engineering Committee
 AER Azimuth Elevation Range
 AERCAB Integrated Aircrew Escape/Rescue Capability
 AERO Aeronautical Weather Report
 AES Artificial Earth Satellite
 AEROS Artificial Earth Research and Orbiting Satellite
 AEROSAT Aeronautical Satellite (NASA ESRO)
 AEW Airborne Early Warning

ABBREVIATIONS AND ACRONYMS

AEWC Airborne Early Warning and Control
 AF Air Force Audio Frequency
 A/F Airfield Airframe
 AFAADS Advanced Forward Area Air Defense System
 AFB Air Force Base Anti Friction Bearing
 AFBM Air Force Ballistic Missile
 AFC Automatic Frequency Control
 AFCE Automatic Flight Control Equipment
 AFCS Adaptive Flight Control System Automatic Flight Control System Avionic Flight Control System Air Force Communication System
 AFCE Automatic Fuel Cutoff
 AFI Automatic Fault Isolation
 AFLS Approach Flashlighting System
 AFM Anti-Friction Metal Air Force Manual
 AFPAM Automatic Flight Planning and Monitoring
 AFR Automatic Frequency Regulation Air Force Regulation Air-Fuel Ratio
 AFTN Aeronautical Fixed Telecommunication Network
 A/G Air-to-Ground
 AGACS Automatic Ground Air Communication System
 AGAP Attitude Gyro Accelerometer Package
 AGARD Advisory Group for Aerospace Research and Development
 AGAVE Automatic Gimballed Antenna Vectoring Equipment
 AGC Automatic Gain Control
 AGCA Automatic Ground Controlled Approach
 AGCS Automatic Ground Checkout System Automatic Ground Control System Automatic Ground Computer System
 AGCU Attitude Gyro Coupling Unit
 AGE Automatic Guidance Electronics
 AGM Air to Ground Missile
 AGT Aviation Gas Turbine
 AGW Allowable Gross (Take Off) Weight
 AGZ Actual Ground Zero
 ah Ampere Hour
 AHI Aerodynamic Heating Indicator
 AHRS Attitude Heading Reference System
 AHRU Attitude Heading Reference Unit
 AI Attitude Indicator Aircraft Interception Airborne Interception Anti-Icing Articulation Index
 AIIRadar Aircraft Identification Radar Air Interception Radar
 AIA Anti-Icing Additive
 AIC Aircraft in Commission Ammunition Identification Code
 AIDAS Advanced Instrumentation and Data Analysis System
 AIDS Aircraft Integrated Data System Airborne Integrated Data System Abort Inertial Digital System
 AIETA Airborne Infrared Equipment for Target Analysis
 AIG Address Indicating Group Accident Investigation Group
 AIL Airborne Instrument Laboratories
 AILAS Automatic Instrument Landing Approach System
 AILS Advanced Integrated Landing System Automatic Instrument Landing System
 AIM Air Intercept Missile

Figure 7-11 -- Abbreviations and Acronyms

compilers in each country but a general editor for each language should have reviewed all the terms before they were printed, preferably a translator actively engaged in translating current literature."

In March 1978 it was agreed that production of the MAD should stop until there had been substantial improvements in the quality of the contents. To this end it was agreed that the national representatives who had prepared the translations should be asked to review a second set of proofs, with guidelines and recommendations provided by the AGARD editor and translator. However, it was found that some of the specialists who had prepared the original translations were no longer available and had been replaced by others who were unfamiliar with the MAD task. The production plan was therefore changed, and the AGARD editorial contractor was assigned full responsibility for making all corrections.

Shortly thereafter it was decided that proof should be supplied to the editorial contractor in triple-spaced form to simplify the jobs of the editor and the keyboard operators. The task of improving the quality of the dictionary was not a small one. Achieving consistency among nine different languages was a very large task for the one contractor who remained on the job. It was of course necessary for her to call on language experts despite her outstanding abilities in several languages as well as her excellent background in the field of aeronautics. At this time it seemed possible to complete the corrections on a schedule that would permit printing of the dictionary in January 1979.

The problems to be solved were numerous and varied. For example, there was a matter of the Turkish character which was designated as a "dotless i." In the review of the first proof, the Turkish translator stated that "Turkish speaking people would have no difficulty in recognizing the words concerned even though spelled with the i with a dot." The editor felt that this was not acceptable to non-Turkish users of the dictionary and therefore it was necessary to add the dotless i character to the film matrix strip. Similar adjustments had to be made in the Cyrillic and Greek alphabets. In addition to matters of translation quality, there were problems involving the handling of multiple translations of English terms as well as translations of multiple English terms. Not only did these have to be coordinated within the dictionary but there were also problems of index preparation to be solved and worked out during this period.

By the end of 1978 there began to be real concern by AGARD as to when the dictionary would be finally published. Commitments had been made for printing and paper, and orders had

been accepted for the dictionary. The project had to be completed as quickly as possible. To that end a NASA STIF staff member visited the editor in London to expedite the further processing as much as possible. When the second set of revisions had been checked by the editor, she and her assistant visited the facility to resolve as many editorial problems as possible before the final processing steps.

In April 1980 the last pages of the editor's second revision of the dictionary were received, whereupon the final corrections were keyboarded and proofread, and the camera-ready copy was prepared. Thus a process that was expected to take about 2 or 3 months extended to more than 2 years. However, all those involved agreed that it was a necessary and worthwhile expenditure of time and effort.

9. FINAL PROCESSING

The final handling of the page proofs incorporated the editorial revisions, typographic corrections, and the addition of translations that had arrived while the dictionary was in the editorial revision stage. Many problems were encountered but few were unexpected for a project of the complexity of a multilingual dictionary and for a project that had been in the works for several years. For example, the PHOTON 713 used for the photocomposition was state-of-the-art when the project was conceived in 1973, but it was almost obsolete by the conclusion of production early in 1980. The required changes in matrix strips were difficult to make. Equipment maintenance was conducted on a standby basis during the final stages of composition. The Greek translations were particularly demanding on the PHOTON 713 because of the heavy use of accents. Until the pages were photocomposed for the editorial revision, it had not been possible to proofread the Greek and Russian translations. At this point the need to incorporate several new characters into the film matrix was revealed. The problem was further complicated by the difficulty in retaining keyboard personnel with skills in Russian and Greek. In the final weeks of corrections, keyboarding of Greek and Russian was handled by regular keyboard personnel.

Style and minor format changes were continued through the final days of processing. While these worried the proofreaders, the availability of a computer base made the handling of such changes a routine matter, even when they invoked changes in the Index section.

The vertical justification program was not sophisticated enough to handle every nuance of typographic style. In the final preparation of the camera-ready copy some cutting and pasting were needed to avoid awkward column and page breaks.

Despite the problems, the final input of revisions and corrections, proofreading, and preparation of camera-ready pages were completed by the summer of 1980.

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14. Abstract

The AGARD Multilingual Aeronautical Dictionary (MAD), second edition, published in 1980, contained 7,300 technical terms defined in English but also translated into nine other languages. The preparation work was performed by some 250 scientists and engineers who were members of AGARD and involved the translation skills of staff in many of the NATO nations. Nearly all the compilation and setting work for the book was done by computer and automatic photo-composition, a task of great complexity and one which is unique. The purpose of this publication is to record how the task was approached, in terms of management planning; to state frankly what went wrong, so that these errors will not be repeated; and to make some modest reference to the successes of the programme. It does not deal in great detail with the technical aspects of the task.

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