

U. S. and Foreign Alloy Cross-Reference Database

Contract NAS8-36166

Final Report

by

Dr. John M. Springer and Dr. Steven H. Morgan

May 31, 1991

Submitted by the Department of Physics

Fisk University

Nashville, Tennessee 37208

Prepared for
George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812

CROSS-REFERENCE OF U.S. AND FOREIGN ALLOY
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I. INTRODUCTION

A. Overview: Marshall Space Flight Center and other NASA installations have a continuing requirement for materials data from other countries involved with the development of joint international Spacelab experiments and other hardware. This need includes collecting data for common alloys to ascertain composition, physical properties, specifications, and designations. This data is scattered throughout a large number of specification statements, standards, handbooks, and other technical literature which make a manual search both tedious and often limited in extent. In recognition of this problem, a contract was awarded to Fisk University to develop a computerized database of information on alloys along with the software necessary to provide the desired functions to access this data. The intention was to produce an initial database covering aluminum alloys, along with the program to provide a user-interface to the data, and then later extend and refine the database to include other nonferrous and ferrous alloys.

B. Type of Data Gathered: The data elements for each alloy record to be delivered to NASA included the items noted in the list below.

- Designation
- UNS number if available
- Originating organization
- Specification number or standard
- Composition (minimum and maximum values, when specified)
- Form
- Alloy type
- Condition
- Yield strength (Minimum, maximum and typical values)
- Tensile strength (Minimum, maximum and typical values)
- SCC rating per MSFC specification 522A
- Temper
- U. S. equivalent alloy (for foreign designations)

In addition, included in the records are indications of where the equivalence, chemical composition, and mechanical property values were found or how they were determined.

C. Software: The original scope of the contract and the collection and analysis of the data itself required a software package to be developed to make it possible to add records, search the database, modify data, and perform the other usual operations expected on a functioning database. It was determined that the Digital Equipment database query language Datatrieve (TM) would be used and imbedded in a more user-friendly environment coded in FORTRAN. As the project developed, the decision was made to combine this database with other materials databases at MSFC using the ORACLE (TM) database language. After this point program development at Fisk concentrated on improving the FORTRAN program to use on-site for database maintenance.

D. Hardware requirements:

The alloy cross-reference database was stored in a Digital Equipment VAX-Datatrieve accessible format at Fisk, and delivered to NASA/MSFC on 1/2" magnetic tape for transfer to the ORACLE system.

II. DATA COLLECTION

A. Sources: Alloy data was mainly collected by evaluating

specifications issued by standards organizations, government publications and, to a lesser extent, manufacturers. A list of these sources is given in Appendix A. The data records themselves give the individual standards and specifications that were referenced in their preparation. It was originally planned that sources of collected data already available from technical associations would be purchased when they meet the needs of this project, but it was found impossible to do this except on a yearly licensing basis, which was not acceptable to MSFC. For reference, some cross-referencing collections available from various publishers are listed in Appendix B.

B. Procedures: Once appropriate metals standards or other data sources were identified and obtained, the limited data needed for the database was extracted and compiled on hand-written datasheets. This information was then added as new records on the database, printed out, and verified by comparing the printout to the original sources. Two internal status fields were used to keep track of whether the data had been verified, was sufficiently complete to put on the NASA/MSFC database, and whether the US/Foreign equivalency had been either established or determined to in all probability not exist. A more detailed description of this process, as given in an extract from the instruction manual created for our student workers, is presented in Appendix C. At the end of this manual are illustrations of each of the standard forms that were developed during the preparation of the database.

These forms included the basic datasheet, a multiple-entry form for recording records that differed only in a few characteristics, a verification form, a country form for summarizing standard terms used for fields such as form and condition, and a standards assessment form used to note relevant information about individual standards and specifications.

CHAPTER III - ALLOY CROSS-REFERENCING

A. General Problem: A major task at hand in preparing the database was to furnish cross-referencing between equivalent US and foreign alloys. While superficially a simple task, in practice it was not so straightforward due to two major difficulties. These difficulties were that (1) the meaning of the term "equivalent" when applied to alloys is so greatly subject to the final application that alloys will be used for, and (2) that different national standards organizations use differing philosophies in determining standards criteria. The latter problem meant that in principle one had to compare standards in which the key indicators of alloy identification were different. For instance, a German specification might use mechanical properties as the basis for determining compliance with the standard while composition was given considerable latitude. The comparable US standard might hold to a strict compositional requirement while considering mechanical properties as a derivative specification. Such problems requiring a detailed standards analysis have been addressed in a publication

by the NSTI, in which very few nominally equivalent materials were found to be truly equivalent for the purpose of ship building.

The former problem of dealing with the ramifications of nominally equivalent alloys in specific applications is to some extent even more of an intractable problem than that of differing rationales in designing standards. This is because it would require foreknowledge of the use to which an alloy will be put, which is impossible in an open access database. Thus while two alloys might be nominally equivalent for general purpose use, some specific difference in properties or tolerances might render them incompatible for a specific application.

B. Existing References: Several compilations of US/Foreign alloy designations with cross-referencing have been published, but very little is published on the rationale for considering different alloys to be equivalent. These may be purchased from the publishers, but were of little direct use in this effort due to copyright problems. A summary of them is furnished in Appendix B. In some cases, foreign standards are self-cross-referencing to US or non-US standards. Although even these are not always unambiguous, when such internal cross-referencing was provided in the standard it was generally used. In addition, certain foreign standards have been written whose sole purpose is to provide cross-referencing.

C. Composition Matching: The system used for most cross-

referencing is composition matching. This may fail, of course, where the standard is specific for mechanical properties and allows considerable latitude in composition. For this database, however, it was the primary means of either finding matching alloys or verifying that alloys linked by other sources were reasonable matches. A program was written to search for compositionally equivalent alloys that had been placed on the database to aid in the cross-referencing. This program allowed matching tolerances in accordance with ASTM standards but was not entirely successful as the database grew due to the long searching time that it required. Another technique was simply to sort the records of a given alloy type by composition and manually compare adjacent groups of records. This was useful, but depended greatly on the order of the sort (in terms of the elements) on the classes of alloys that would be grouped together. All of these techniques required individual attention to each alloy at some point to verify the matching that was done.

C. Heat Treatments/Conditions: A subsidiary part of the alloy matching process was to also match heat treatments and other conditioning methods. Since the behavior of a metal and its mechanical properties depend so much on the specific conditions of its manufacture, we attempted to provide an equivalent condition in terms of its US nomenclature for each alloy record on the database. In some cases this was not very difficult, as for instance the temper designating systems for aluminum that are used in many countries. In other cases, one could only make a rough comparison

since the condition specifications allowed considerable latitude in their application. In many cases, there was a one-to-many or many-to-one problem in which the foreign condition codes encompassed many more detailed domestic codes or vice versa.

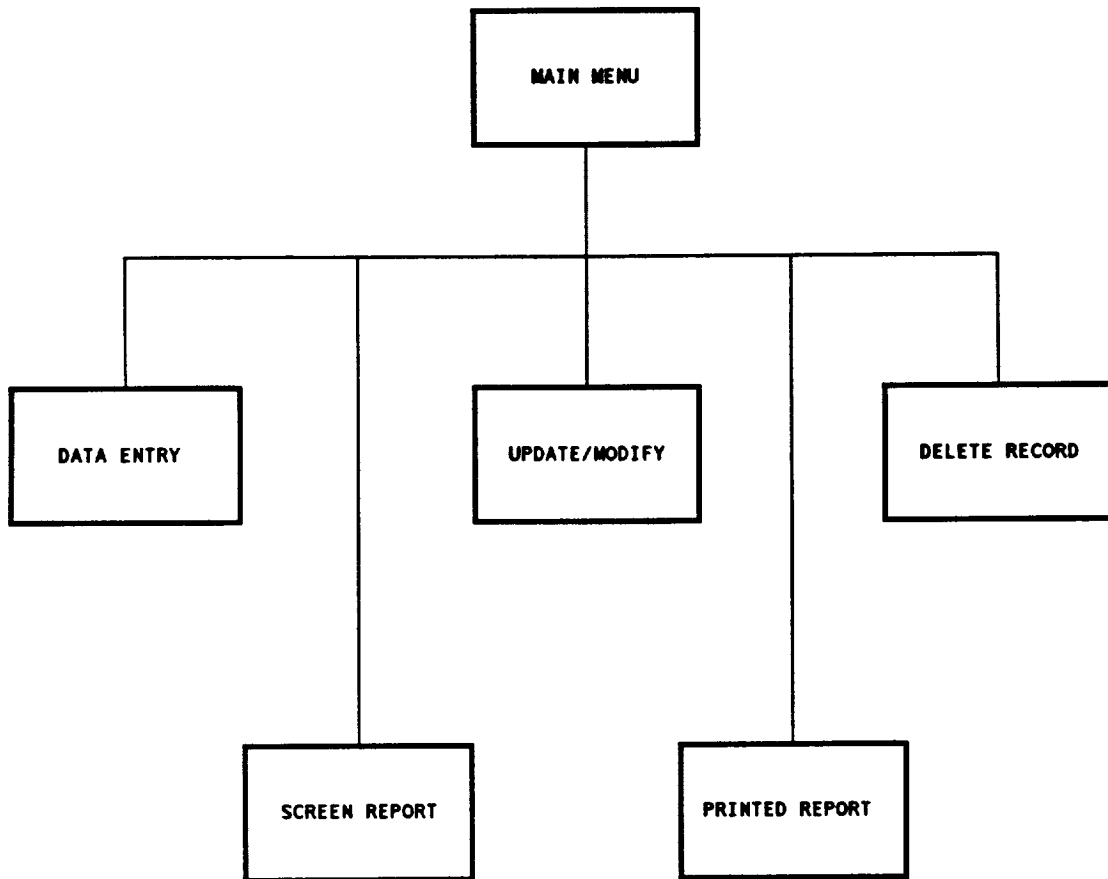
CHAPTER IV - SOFTWARE

The database program to be used with the data was originally specified to be written in Fortran using embedded Datatrieve statements. It was to have the usual database functions, including record searching, entry, deletion, updating, and report generation. With the transition of the materials database at MSFC to an ORACLE (TM) environment, development of the Fisk program was reduced to those activities needed to make it more responsive to the data collection and analysis effort. A simple block diagram of the main parts of the program is on the next page. The data entry and updating routines are the parts that have been most important to data collection, and have been written in a full screen forms-type environment for Digital Equipment VT series terminals. Program listings are given in Appendix E.

CHAPTER V - RESULTS

A. SUMMARY OF DATA: Approximately 10,000 aluminum data records, 10,000 steel records, and 2000 copper records were collected from

DATABASE PROGRAM



standards and specifications. Examples of the data are shown in the table on the next page. The first entry shows data for the US ferrous alloy 405 stainless steel, in the plate form and in the annealed condition. The next entry shows the printed record for the West German alloy X6CrAl13, which is equivalent to the US 405 steel. The third figure shows another alloy, this time from France, which is also nominally equivalent to the 405 designation. As all three records have the same form and condition, their mechanical properties as well as their compositions can be compared to further evaluate their equivalence for a particular application.

CHAPTER VI - CONCLUSIONS/LESSONS LEARNED

A. Size of Database: The number of distinct designations for the three alloy types we dealt with is very large, in the several tens of thousands if one counts commercial names. This meant that the problems of data control were very difficult to handle without constant attention. In the university environment, where the academic cycle makes a constant level of management virtually impossible, these data control problems are even harder to deal with.

B. Non-uniformity of Data Sources: We obtained much of our data on composition and properties from international standards written in various formats and languages. Each of these documents had to be at least partially translated and prepared for the data entry personnel, who were students for the most part. This made it necessary to first enter the data onto standard data sheets to assure a uniform format for data entry. This therefore greatly increased the time needed to get raw data on the database over the case where direct entry from the original documents would have been possible. It also created problems in trying to keep to a standard format when differing sources used slight variations in the format of designations. For example, the designation Al99.9 in one standard might be written Al99,9, with the period changed to a comma.

C. Changing Standards: Standards are continually being created, revised and canceled. Canceled standards were difficult to obtain, and made a historically complete database extremely difficult, if not

impossible. On the other hand, revised and updated standards presented the problem of aiming at a moving target. As standards evolve, quite basic alloy properties such as composition may change. This meant that back-checking data records against recently revised standards often gave the impression that the original records were incorrect, while in actual fact the standard are simply been adjusted to better reflect modern metallurgical practice.

APPENDIX A
REFERENCE INDEX FOR US/FOREIGN CROSS-REFERENCE DATABASE

This list gives the meanings of the publication codes used in the three reference fields in each data record.

=====

H01
Handbook of Aluminum (Alcan)

H02
Handbook of International Alloys Composition and Designations, Vol 3
Harold J. Hucek, Editor
Metals and Ceramics Information Center: Columbus

H03
Handbook of Soviet Alloy Compositions
Douglas Joslyn, Jr and Marshall J. Wahll
Metals and Ceramics Information Center: Columbus
1980

H04
Metals Handbook, Ninth Edition, Vol 2
William H. Cubberly, Hugh Baker, et. al, editors
American Society For Metals: Metals Park
1979

H05
Worldwide Guide to Equivalent Nonferrous Metals and Alloys
Paul M. Unterweiser, Staff Editor
American Society For Metals: Metals Park
1980

H06
Key to Aluminum Alloys
W. Hufnagel
Aluminium-Zentrals: Dusseldorf
1982

H08
Sourcebook on Industrial Alloy and Engineering Data
American Society For Metals: Metals Park
1978

H09
The Properties of Aluminium and Its Alloys
The Aluminium Federation: Birmingham UK
1983

H10
Aluminium-Taschenbuch
Herausgeber und Bearbeiter

Aluminium-Zentrale: Dusseldorf
1983

H11
JIS Ferrous Materials and Metallurgy
Japanese Standards Association
1986

H12
JIS Non-Ferrous Materials and Metallurgy
Japanese Standards Association
1986

H13
Aluminum Properties and Physical Metallurgy
John E. Hatch
American Society For Metals: Metals Park
1984

H14
Metals and Alloys in the Unified Numbering System, Fourth Edition
Alvin G. Cook, Chairman UNS Advisory Board
Society of Automotive Engineers, Inc.: Warrendale
1986

H15
Handbook of Comparative World Steel Standards, Vol 6
International Tech Information Institute: Tokyo
1985

H16
Military Handbook 694A(MR)
1966

H17
Light Alloys Metallurgy of the Light Metals
I. J. Polmear
American Society For Metals: Metals Park

H18
Alcoa Aluminum Handbook
Aluminum Company of America: Pittsburgh
1967

H19
Metals Handbook, Ninth Edition, Vol 1
Bruce P. Bardes, Editor
American Society For Metals: Metals Park
1978

H20
Metals Handbook, Ninth Edition, Vol 3

David Benjamin, Senior Editor
American Society For Metals: Metals Park
1980

H22
Worldwide Guide to Equivalent Nonferrous Metals and Alloys,
Second Edition
Harold M. Cobb, Consulting Editor
ASM International: Metals Park
1987

H23
Engineering Properties of Steel
Philip D. Harvey, Editor
American Society For Metals: Metals Park
1982

H24
Material Properties Handbook, Vol 1
The Royal Aeronautical Society: Hamilton Place
1959

H25
Material Properties Handbook, Vol 2
The Royal Aeronautical Society: Hamilton Place
1960

H26
Military Handbook 694A(MR)
1966

H27
Metals Data
Samuel L. Hoyt, Technical Advisor
Reinhold Publishing Corp: New York
1952

H28
ASM Metals Handbook
1964

H34
Heat Treaters's Guide
Paul M. Unterweiser, Senior Editor
American Society For Metals: Metals Park
1982

H35
Steel Products Manual: Stainless and Heat Resisting Steels
American Iron and Steel Institute: Washington
1974

H39

Metals Databook

Colin Robb

The Institute of Metals: London

1987

H42

Wolman's Engineering Alloys, Sixth Edition

Robert C. Gibbons, Editor

American Society for Metals: Metals Park

1979

H45

Metals and Alloys in the Unified Numbering System, Fifth Edition

Alvin G. Cook, Chairman UNS Advisory Board

Society of Automotive Engineers, Inc.: Warrendale

1989

M06

Aluminum Standards and Data, Seventh Edition

The Aluminum Association: Washington

1982

M07

Aluminum Standards and Data, First Edition

The Aluminum Association: Washington

1978

M08

Aluminum Standards and Data, Second Edition

The Aluminum Association: Washington

1986

M09

Standards for Aluminum Sand and Permanent Mold Castings,
Eleventh Edition

The Aluminum Association: Washington

1986

R01

International Metallic Materials Cross Reference, Second Edition

James V. Arcuri and Daniel L. Potts

Genium Publishing Corporation: Schenectady

1984

R02

Materials Selection List For Space Hardware Systems, Vol 6

Marshall Space Flight Center: Huntsville

1984

R08

Filler Metal Comparison Chart
American Welding Society: Miami
1986

R09
Stahlschlüssel: Key to Steel
C. W. Wegst
Verlag Stahlschlüssel Wegst GmbH
1986

R10
Registration Record of International Alloy Designations and
Chemical Composition
The Aluminum Association: Washington
1987

R11
Registration Record of AA Designations and Chemical
Composition Limits
The Aluminum Association: Washington
1987

R15
Nomenclature Internationale Des Alliages D'Aluminum De Fonderie,
Fourth Edition
Patrick Bertrand
Centre Technique Des Industries De La Fonderie
1986

R16
Structural Aluminum Design
Karl Angermayer
Reynolds Metals Company
1962

R17
Design Criteria for Controlling Stress Corrosion Cracking
Marshall Space Flight Center: Huntsville
1977

R18
L'Aluminium, Tome 1
M. Pierre Barrand
Editions Eyrolles: Paris
1964

R19
The Aluminum Data Book
G. W. Birdsall, Editor
Reynolds Metals Company: Richmond
1965

R20
Metallurgy of Aluminum Alloys
Marc Van Lancker
John Wiley and Sons:
1967

R22
ASM Metals Reference Book
William Cubberly, Director Reference Publications
American Society For Metals: Metals Park
1983

R23
Multilingual Glossary of Heat Treatment Terminology
Prof. Dr. Ing. Habil. Eugeniusz Tyrkiel, Editor
The Institute of Metals: London
1986

R29
Registration Record of Aluminum Association Alloy Designations
and Chemical Composition Limits for Aluminum Alloys in the Form
of Castings and Ingot
The Aluminum Association: Washington
1987

S01
NF A35-604
Tool Steels - Comparison of French and Foreign Standard Grades
Association Francaise De Normalisation: Paris
1978

=====
Note: Each entry is preceded by the index symbol by which it is
referred to in the database. The index symbols are not
consecutive because some references on our publications
list are not used in the database.

NATIONAL STANDARDS BY COUNTRY

COUNTRY ALUMINIUM SPECIFICATIONS

AUSTRALIA	JIS H2211	UNE 38032
	JIS H2212	UNE 38033
AS 1734	JIS H4000	UNE 38034
AS 1865	JIS H4040	UNE 38125
AS 1866	JIS H4080	UNE 38201
AS 1867	JIS H4090	UNE 38211
	JIS H4100	UNE 38213
CANADA	JIS H4120	UNE 38214
	JIS H4140	UNE 38215
Alcan	JIS H4160	UNE 38231
CSA HA.1	JIS H4170	UNE 38233
CSA HA.2	JIS H4180	UNE 38234
CSA HA.3	JIS H5114	UNE 38235
CSA HA.4	JIS H5202	UNE 38241
CSA HA.5	JIS H5302	UNE 38252
CSA HA.6	JIS H5402	UNE 38253
CSA HA.7	JIS Z3232	UNE 38256
CSA HA.7.1	JIS Z3263	UNE 38257
CSA HA.8		UNE 38261
CSA HA.9	NORWAY	UNE 38262
CSA HA.10		UNE 38263
	NS 17005	UNE 38265
DENMARK	NS 17010	UNE 38266
	NS 17011	UNE 38267
DS 3002	NS 17105	UNE 38268
DS 3012	NS 17205	UNE 38269
	NS 17210	UNE 38271
FRANCE	NS 17215	UNE 38291
	NS 17220	UNE 38319
AIR 3350	NS 17305	UNE 38322
AIR 9050	NS 17310	UNE 38332
NF A50-411	NS 17405	UNE 38337
NF A50-451	NS 17410	UNE 38344
NF A50-701	NS 17510	UNE 38354
NF A50-901	NS 17512	UNE 38372
NF A57-350	NS 17520	UNE 38374
NF A57-702	NS 17525	UNE 38383
NF A57-703	NS 17532	UNE 38392
NF A02-002	NS 17535	
	NS 17550	SWEDEN
JAPAN	NS 17552	
	NS 17570	MNC 14E
JIS H2102		MNC 40E
JIS H2103		MNC 41E
JIS H2111		MNC 42E
JIS H2117	UNE 28264	SIS 144004
JIS H2118	UNE 38030	SIS 144005
JIS H2206	UNE 38031	SIS 144007
	SPAIN	

SIS 144008	UNITED KINGDON	BS 5L17
SIS 144010		BS 5L34
SIS 144015	BS 1470	BS 6L37
SIS 144017	BS 1471	BS L102
SIS 144020	BS 1472	BS L103
SIS 144021	BS 1473	BS L105
SIS 144022	BS 1474	BS L106
SIS 144024	BS 1475	BS L108
SIS 144054	BS 1490	BS L109
SIS 144055	BS 2897	BS L110
SIS 144067	BS 2898	BS L111
SIS 144102	BS 2L55	BS L112
SIS 144103	BS 2L77	BS L113
SIS 144104	BS 2L80	BS L114
SIS 144106	BS 2L83	BS L115
SIS 144107	BS 2L84	BS L116
SIS 144120	BS 2L85	BS L117
SIS 144133	BS 2L87	BS L118
SIS 144134	BS 2L89	BS L119
SIS 144140	BS 2L90	BS L154
SIS 144146	BS 2L91	BS L155
SIS 144163	BS 2L92	BS L156
SIS 144212	BS 2L93	BS L157
SIS 144225	BS 2L95	BS L158
SIS 144244	BS 2L96	BS L159
SIS 144245	BS 2L97	BS L160
SIS 144250	BS 2L98	BS L161
SIS 144251	BS 2L99	BS L162
SIS 144252	BS 3L51	BS L163
SIS 144255	BS 3L52	BS L164
SIS 144260	BS 3L54	BS L165
SIS 144261	BS 3L58	BS L166
SIS 144262	BS 3L59	BS L167
SIS 144263	BS 3L60	BS L168
SIS 144282	BS 3L61	DTD 150A
SIS 144283	BS 3L63	DTD 246C
SIS 144337	BS 3L78	DTD 297A
SIS 144338	BS 3L80	DTD 324B
SIS 144355	BS 3L81	DTD 372B
SIS 144425	BS 3L86	DTD 5004A
SIS 144438	BS 4300/4	DTD 5008B
	BS 4300/6	DTD 5010A
SWITZERLAND	BS 4300/7	DTD 5014A
	BS 4300/8	DTD 5018A
	BS 4300/14	DTD 5024
SN 210900	BS 4L35	DTD 5030A
SN 210901	BS 4L36	DTD 5040A
SN 210902/1	BS 4L44	DTD 5044
SN 210903/1	BS 4L53	DTD 5070B
SN 210906/1	BS 4L54	DTD 5074A
SN 210907/1	BS 4L56	DTD 5080
SN 210908/1	BS 5L16	DTD 5084A

DTD 5094A
DTD 5100A
DTD 5104A
DTD 5110
DTD 5114
DTD 5120B
DTD 5124
DTD 5130A
DTD 716B
DTD 722B
DTD 727B
DTD 731B
DTD 735B
DTD 745A

USA

5049A-52242A(MR)
AA 86 Std and Data
AA-CS-M1-85
AA-CS-M11-85
AA-CS-M3-85
AA-CS-M4-84
AA Registry
AMS 4000
AMS 4001
AMS 4004
AMS 4005
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AMS 4283
AMS 4284
AMS 4290
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AMS 4310
AMS 4311
AMS 4313
AMS 4320
AMS 4321
AMS 4340
AMS 4341
AMS 4342
AMS 4344
AMS MAM 4208
AMS MAM 4209

AMSE SB209	ASTM B491	QQ-A-225/2
AMSE SB209	ASTM B531	QQ-A-225/2
AMSE SB211	ASTM B547	QQ-A-225/3
AMSE SB221	ASTM B609	QQ-A-225/4
ANSI/AWS A5.1-88	ASTM B632	QQ-A-225/5
ANSI/AWS A5.3-80	MIL-C-211808	QQ-A-225/6
ANSI/AWS A5.8-81	MIL-4-81596	QQ-A-225/7
ANSI/AWS A5.10-80	MIL-A-12545	QQ-A-225/8
ASME SB209	MIL-A-12545C(MR)	QQ-A-225/10
ASME SB210	MIL-A-15153A	QQ-A-225/14
ASME SB211	MIL-A-21180C	QQ-A-250/1
ASME SB221	MIL-A-22771D	QQ-A-250/2
ASME SB234	MIL-A-22774	QQ-A-250/10
ASME SB241	MIL-A-25995	QQ-A-250/11
ASME SB247	MIL-A-45225	QQ-A-250/12
ASTM B85	MIL-A-46027	QQ-A-250/13
ASTM B85-60	MIL-A-46083	QQ-A-250/14
ASTM B108	MIL-A-46104	QQ-A-250/15
ASTM B108-59T	MIL-A-52242A(MR)	QQ-A-250/16
ASTM B178-49T	MIL-A-63547 (AR)	QQ-A-250/17
ASTM B179	MIL-A-81596	QQ-A-250/18
ASTM B179-60	MIL-A-8882	QQ-A-250/20
ASTM B209	MIL-B-20148C	QQ-A-250/21
ASTM B210	MIL-C-211808	QQ-A-250/22
ASTM B210-49T	MIL-E-16053	QQ-A-250/28
ASTM B211	MIL-F-17132	QQ-A-250/29A
ASTM B211-49T	MIL-P-22771	QQ-A-250/3
ASTM B221	MIL-P-25995	QQ-A-250/30
ASTM B221-49T	MIL-T-50777	QQ-A-250/4
ASTM B230	MIL-T-7081	QQ-A-250/5
ASTM B233	MIL-W-23351	QQ-A-250/6
ASTM B234	MIL-W-85	QQ-A-250/7
ASTM B234-48T	QQ-A-1876	QQ-A-250/8
ASTM B236	QQ-A-200/1	QQ-A-250/9
ASTM B241	QQ-A-200/2	QQ-A-367
ASTM B247	QQ-A-200/3F	QQ-A-371D
ASTM B26	QQ-A-200/4	QQ-A-371F
ASTM B26-60T	QQ-A-200/5	QQ-A-430
ASTM B275	QQ-A-200/6	QQ-A-566
ASTM B275-63	QQ-A-200/7	QQ-A-591B
ASTM B313	QQ-A-200/8	QQ-A-591E
ASTM B314	QQ-A-200/9	QQ-A-591F
ASTM B316	QQ-A-200/10	QQ-A-596B
ASTM B317	QQ-A-200/11	QQ-A-596D
ASTM B324	QQ-A-200/12	QQ-A-596E
ASTM B345	QQ-A-200/13	QQ-A-601
ASTM B373	QQ-A-200/14	QQ-A-601B-1
ASTM B396	QQ-A-200/16	QQ-A-601E
ASTM B398	QQ-A-200/19	QQ-A-825
ASTM B404	QQ-A-20D/1C	QQ-A-900/5F
ASTM B429	QQ-A-224/6	QQ-B-655
ASTM B483	QQ-A-225/1	QQ-B-825

QQ-Q-200/17	WL 3.1254 Beiblatt 1	UNI 3041
QQ-R-566	WL 3.1324/1	UNI 3043
SAE 201	WL 3.1324/100	UNI 3044
SAE B547	WL 3.1354/1	UNI 3045
SAE J452	WL 3.1354/100	UNI 3046
SAE J454	WL 3.1354/2	UNI 3048
SAE J4540	WL 3.1354/3	UNI 3049
SAE J459C	WL 3.1354/4	UNI 3050
SAE J460E	WL 3.1364/1	UNI 3051
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WW-T-700/2	WL 3.1754	UNI 3054
WW-T-700/3	WL 3.1854	UNI 3055
WW-T-700/4	WL 3.1854 beiblatt 1	UNI 3058
WW-T-700/5	WL 3.2374/1	UNI 3059
WW-T-700/6	WL 3.2374/100	UNI 3567-66
WW-T-70012D	WL 3.2374/2	UNI 3568
	WL 3.2374/3	UNI 3569-66
USSR	WL 3.2374 Beiblatt 1	UNI 3570
	WL 3.2384/1	UNI 3571
GOST 2685	WL 3.2384/100	UNI 3572
GOST 4784	WL 3.2384/3	UNI 3573
	WL 3.3214/1	UNI 3574
WEST GERMANY	WL 3.3214/100	UNI 3575
	WL 3.3214/2	UNI 3576
DIN 1712/1	WL 3.3214/3	UNI 3577
DIN 1712/3	WL 3.3214/4	UNI 3579
DIN 1714 (Sup. 1)	WL 3.3214/5	UNI 3581
DIN 1725/1	WL 3.3214 Beiblatt 1	UNI 3582
DIN 1725/2	WL 3.3354	UNI 3583
DIN 1725/3	WL 3.3354 Beiblatt 1	UNI 3584
DIN 1725/5	WL 3.3524/1	UNI 3735
DIN 1732/1	WL 3.3524/2	UNI 3736
DIN 1745/1	WL 3.3524 Beiblatt 1	UNI 4507
DIN 1746/1	WL 3.4144/1	UNI 4508
DIN 1747/1	WL 3.4144/100	UNI 4509
DIN 1747/3	WL 3.4144 Beiblatt 1	UNI 4513
DIN 1748/1	WL 3.4334/1	UNI 4514
DIN 1749/1	WL 3.4334/100	UNI 5074-74
DIN 1788	WL 3.4364/1	UNI 5076-74
DIN 1788/3	WL 3.4364/100	UNI 5077-74
DIN 5513	WL 3.4374/1	UNI 5079-74
DIN 8512	WL 3.4374/100	UNI 5080-74
DIN 8513	WL 3.4377/1	UNI 5452-64
DIN 8566/1	WL 3.4377/100	UNI 6170-68
DIN SS13	WL 3.4384/1	UNI 6250-68
VDS Liste	WL 3.4384/100	UNI 6251-68
WHDL Teil 1, Band 2	WL 3.4394/1	UNI 6252-68
WL 3.1124/1	WL 3.4394/100	UNI 6253-68
WL 3.1124/100	WL 3.4394/2	UNI 6263-68
WL 3.1254/1	WL 3.4394/3	UNI 6359-68
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WL 3.1254/2		UNI 6362-68
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UNI 9006/4

BELGIUM

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NETHERLANDS

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NEN 6026

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ISO

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ISO TR2778

COPPER SPECIFICATIONS

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STEEL SPECIFICATIONS

AUSTRALIA

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CANADA

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FRANCE

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SAE J1397
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Steel Product Manual

USSR

MCIC-HB-05

WEST GERMANY

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DIN 17102/10
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DIN 17120/10
DIN 17140
DIN 17155/2
DIN 17200
DIN 17210
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DIN 17212
DIN 17224

DIN 17240	WL 1.4454/100	WL 1.4943/100
DIN 17243	WL 1.4504/1	WL 1.4943/2
DIN 17245	WL 1.4504/100	WL 1.4943/3
DIN 17280	WL 1.4514	WL 1.4943 Beiblatt 1
DIN 17350	WL 1.4534	WL 1.4944/1
DIN 17440	WL 1.4534 Beiblatt 1	WL 1.4944/2
DIN 17441	WL 1.4544/1	WL 1.4944/3
DIN 17445	WL 1.4544/2	WL 1.4944 Beiblatt 1
DIN 17465	WL 1.4544/3	WL 1.4954
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DIN 2393/2	WL 1.4545/100	WL 1.4956
DIN 488/1	WL 1.4546/1	WL 1.4956
WL 1.1144	WL 1.4546/3	WL 1.4957
WL 1.1144 Beiblatt 1	WL 1.4546 Beiblatt 2	WL 1.4957 Beiblatt 1
WL 1.1174	WL 1.4548/1	WL 1.4974/1
WL 1.1174 Beiblatt 1	WL 1.4548/100	WL 1.4974/2
WL 1.1194	WL 1.4548/2	WL 1.44974 Beiblatt
WL 1.1194 Beiblatt 1	WL 1.4548/3	
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WL 1.1274/100	WL 1.4549	WL 1.4984/2
WL 1.1274 Beiblatt 1	WL 1.4549 Beiblatt 1	WL 1.4984 Beiblatt 1
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WL 1.4014 Beiblatt 1	WL 1.4928 Beiblatt 1	WL 1.6657/1
WL 1.4044	WL 1.4930/1	WL 1.6657/100
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WL 1.4314/1	WL 1.4930 Beiblatt 1	WL 1.6658/100
WL 1.4314/100	WL 1.4933/1	WL 1.6722
WL 1.4314/2	WL 1.4933/2	WL 1.6722/1
WL 1.4314/3	WL 1.4933 Beiblatt 1	WL 1.6722/100
WL 1.4314/4	WL 1.4934	WL 1.6723
WL 1.4324/1	WL 1.4939/1	WL 1.6723/1
WL 1.4324/2	WL 1.4939/2	WL 1.6723/100
WL 1.4324/3	WL 1.4939 Beiblatt 1	WL 1.6723 Beiblatt 1
WL 1.4454	WL 1.4943/1	WL 1.6944/1

WL 1.6944/2	UNI 5867
WL 1.6944/3	UNI 6407
WL 1.6944/4	UNI 7070
WL 1.6944 Beiblatt 1	UNI 7382
WL 1.6964	UNI 7500
WL 1.6964 Beiblatt 1	UNI 7845
WL 1.6974	UNI 8317
WL 1.6974/1	UNI EU28
WL 1.6974/100	
WL 1.6974 Beiblatt 1	ISO
WL 1.7214/1	
WL 1.7214/100	ISO 630
WL 1.7214/2	ISO 2604/2
WL 1.7220	ISO 2604/3
WL 1.7220 Beiblatt 1	ISO 3573
WL 1.7224/1	ISO 3755
WL 1.7224/100	ISO 4950/2
WL 1.7254/1	ISO 4950/3
WL 1.7254/100	ISO 4951
WL 1.7324	ISO 4960
WL 1.7324/100	ISO 4995
WL 1.7324 Beiblatt 1	ISO R683/1
WL 1.7334 Beiblatt 1	ISO R683/2
WL 1.7734/1	ISO R683/3
WL 1.7734/100	ISO R683/4
WL 1.7734 Beiblatt 1	ISO R683/5
WL 1.7736/1	ISO R683/7
WL 1.7744/1	ISO R683/8
WL 1.7744/100	ISO R683/9
WL 1.7744 Beiblatt 1	ISO R683/10
WL 1.7784/1	ISO R683/11
WL 1.7784/100	ISO R683/13
WL 1.7784/2	ISO R683/14
WL 1.7784/3	
WL 1.7784/4	
WL 1.7784/5	
WL 1.7784 Beiblatt 1	
WL 1.8154	
WL 1.8154 Beiblatt 1	
WL 1.8514	
WL 1.8514 Beiblatt 1	
WL 1.8544	
WL 1.8544 Beiblatt 1	
WL 1.8564	
WL 1.8564 Beiblatt 1	

ITALY

UNI 3608
UNI 4838
UNI 5462-64

APPENDIX B
AVAILABLE CROSS-REFERENCE PUBLICATIONS

International Metallic Materials Cross Reference, 3rd ed
D. L. Potts, J. G. Gensure, editors
Genium Publishing Corporation
PO Box 1436 Schenectady, NY 12301

Worldwide Guide to Equivalent Nonferrous Metals and Alloys
ASM International
Materials Park, Ohio 44073

Worldwide Guide to Equivalent Irons and Steels
ASM International
Materials Park, Ohio 44073

APPENDIX C
EXTRACT FROM MANUAL FOR DATA ENTRY

INTRODUCTION

Data Accuracy and Validity

The accuracy and validity of the database is extremely important. As the file is built, the record will be matched for consistency with the original data sheets and appropriate corrections will be made. However, getting the data entered correctly the first time will save much time in the long run.

1. DATA COLLECTION

Alloy data are to be extracted from the standards currently on hand. The ALLOY DATA SHEETS are used to record all information about an alloy to be stored in the data file. Each sheet should have a pre-assigned record number which shall be keyed when the record containing that data is entered. These sheets may be obtained from Data Control.

The following pages show sample data sheets. Extreme caution should be taken when writing information onto the data sheets as these are the primary building blocks for the data file.

New records may be created using either of two methods.

1. The ALLOY DATA SHEET should be used when a designation is to be entered for the first time. All information for the designation should be written on the data sheet.

2. The MULTIPLE ENTRY ALLOY DATA SHEET may be used when a record which has characteristics similar to those of an existing record is to be written and only a few changes are required. Only the changes should be written on the data sheet. "Record Number" refers to the "new" record number. "Master Record Number" refers to the record from which the duplicates to be made.

Prior to completing these data sheets it is necessary to have an adequate understanding of the format for writing such information as alloy designation, condition, etc. as the formats vary from one country to another. Given this, a FORMAT GUIDE PER COUNTRY form and STANDARDS ASSESSMENT FORM must be completed by Data Control before work is begun on any group of alloys. (See Figure 1.1 and Figure 1.2)

The STANDARDS ASSESSMENT FORM is especially crucial when working on steel alloys. Because of the more complex nature of steels, there is a lesser degree of uniformity in the writing of standards. Each foreign standard must be paired with its potentially equivalent U.S. standard and analyzed on the basis of equivalence in chemical and mechanical properties.

Listed below are general guidelines. Refer to Appendix A (DATA SHEET GLOSSARY) for detailed explanations of these terms. Designations should be written according to the format given in the source Standard (See FORMAT GUIDE PER COUNTRY). Chemical Name designations should be written in upper/lower case letters with the first letter of each element being capitalized. (E.g., AlMg) Form should be written in upper/lower case letters. To provide consistency throughout the database, a FORM MODIFICATION notebook which contains all forms to be used in the database has been developed. You must refer to "Forms Summary" in the notebook to ascertain that all forms which you write are valid. Condition should be that terminology given in the source Standard. (See Figure 1.1 FORMAT GUIDE PER COUNTRY.)

Typical conditions for Aluminum are:

- F - as fabricated.
- O - annealed/recrystallized; may be followed by an integer indicating how it was annealed.
- H# - strain hardened, where # represents an integer designation of the type of treatment applied to the alloy.
- T - Thermally treated to produce stable tempers other than F, O or H, followed by one or more digits indicating specific treatment applied.
- W - Solution heat-treated; an unstable temper applicable to alloys which spontaneously age at room temperature after solution heat treatment. May be followed by a value indicating the period of natural aging (eg, W 1/2 hr).

Eqv-Cond indicates the U.S. condition code equivalent to the code for similar treatments by which foreign aluminum alloy producers achieve a desired result. The EQVTEMP program (in the TEMPER directory) is used to determine condition equivalence for aluminum alloys. Standards organizations handle steel conditions differently from aluminum conditions. Condition codes are not systematically written so as to represent a given set of treatments which a steel alloy undergoes. Instead, more general terms (e.g., "quenched & tempered") are given and supplemental tables of temperature and time ranges required to achieve specific conditions must be used.

EQV-COND for steel should be determined as follows:

- a) Data Control shall perform a comparative analysis of similar foreign/U.S. standards and assess the literal meanings discussed therein. As a result of this analysis, conditions which have different phrasing, under proper circumstances, may be regarded as equivalent. E.g., Solution Heat Treated might be equivalent to Annealing if temperature and time ranges, yield strength, tensile strength, etc. are the same.
- b) Otherwise, the EQV-COND should be worded the same as the condition. I.e., "Quenched and Tempered" equals "Quenched and Tempered". Data Control has compiled a list of steel condition abbreviations to be used. (See "Steel Conditions" in Appendix A)

ALLOY CATEGORIES

Aluminum Alloys included in the database fall into one of two categories: 1) Wrought Alloy or 2) Casting Alloy. The diagram below is a pictorial representation of these two groups. This illustration is not inclusive of all forms in which alloys are available; however, these are some of the most common. It is necessary to distinguish between these two categories as the designation formats oftentimes differ for wrought and casting alloys.

UNS Number applies to the U.S. designations. In foreign records the UNS-NO is that number for the US-Equivalent listed in the record (UNS=Unified Numbering System).

Country Name indicates the name of the country in which the alloy originated. (ISO-International Standards Organizations is treated with the same regard as country.)

US-Equiv. should be obtained from the specification, Matching Program or indexed reference materials. All US-Equivalents given in foreign records must also exist in the U.S. data file. If no such U.S. alloy exists, consult Data Control.

Eqv. Ref. refers to the source index representing the publication listing the US-Equivalent for a given alloy.

Alloy Type refers to the primary material in an alloy's composition.

Country Code indicates the unique two-digit numerical code assigned to the country by Data Control.

Orig-Org refers to the (abbreviated) standard organization under which the alloy was developed or the company whose Trademark is used.

Status - Records in their final stage of the verification process shall contain the letter "V". When the record is entered for the first time it is given a status code "VECMT" where

- C indicates the Chemical Composition has not been verified.
- D appears in the Status field when the duplicate feature of SCRNENTR is used to create a new record (VECMDT).
- E indicates the US-Equivalent has not been verified.
- M indicates the Mechanical Properties have not been verified.
- T indicates the equivalent U.S. temper has not been added to the US-Equivalent. An asterisk (*) in the "T" position indicates no equivalent US temper exists for the foreign temper shown in the record.

As the related fields are verified, the corresponding status code is removed the status field. (E.g., when the chemical composition has been verified, the "C" should be removed from the status field.)

Specifications refer to Standards which contain information about the alloy. See FORMAT GUIDE PER COUNTRY for the proper format. (Figure 1.1)

Composition Unit = 1 (% of element contained in alloy by weight).

Composition Values should be written as follows:

- Add leading zero for values less than 1.0, eg., 0.25, 0.1
- At least one digit should follow the decimal, eg., 1.0, 1.25
- Do not add trailing zero when there is at least one digit already following the decimal.

Correct: 1.5
Incorrect: 1.50

The Min-Al value equals REM whenever composition table lists "Remainder" for that field.

The OTHER1, OTHER2 and OTHER3 fields are used to record chemical composition information for miscellaneous elements. "Each Othr" indicates the limits for non-specified impurities on an individual basis. "Total Othr" indicates total limits for non-specified impurities. Sometimes a standard will give limits for impurities not defined in the FADB record structure. The chemical symbol should be written in the OTHER1 field and the min/max values should be written in the min-ol/max-ol fields. When recording additional chemical composition data record the miscellaneous elements first, then "Each Othr", followed by "Total Othr". If more than the three fields are needed, enter the remaining data in the NOTES field.

Yield/Tensile Strength should always contain units equal to "ksi" in the final verification stage of the record. Record the information on the data sheet as it appears in the standard. That is, if the standard has Yield/Tensile values in MPa, kp or kgf units, key them into the record that way. There are two exceptions:

1. N/mm^2 is the same as MPa. Replace N/mm^2 with MPa on the data sheet.
2. Some standards give Yield/Tensile values in psi units. These numbers are 1000 times the ksi values.

Example: 85,000 psi equals 85 ksi

When writing the data sheets, divide by 1000 (i.e., drop the three zeros) and change the psi units to ksi on the data sheets as in the example above. Convert all "MPa", "kp", "kgf", etc. units using the appropriate conversion procedure stored in Datatrieve.

Whenever multiple thickness ranges are given and the Yield/Tensile values change with thickness, the values corresponding to the smallest thickness range should be used. As shown in the example below the following entry would be made in the record.

Examples:

Thickness (mm)	Min. Yield (MPa)	Min. Tensile (MPa)
1.00 through 12.50	185	230
12.50 through 25.00	215	245
over 25.00	250	300

MIN-YLD field should contain "185 MPa". MIN-TNS field should contain "230 MPa".

NOTES fields should contain: Mech Prop for 1.00-12.50mm thickness

Notice the spacing and punctuation in the NOTES field. All information stored in the database in its final form should be in English units. The CONV-MPA-KSI procedure should be used to convert the values in the Yield and Tensile field to "ksi" units. This procedure is executed in Datatrieve (at the "DTR>" prompt). The NOTES program should be used to convert millimeters to inches in the Notes field (at the "\$" prompt).

IRR Designation is the International Registry Record number. These designations are registered with the Aluminum Association (international). The number stored in the IRR field in the database is a compositional equivalent to the alloy designation in that record. This field provides information on similar alloys in the absence of or in addition to the US Equivalent data.

ALCAT indicates Alloy Category. This field is used for Ferrous designations to further distinguish product types. Examples of Alloy Categories include "Stainless Steel", "Carbon Steel", etc.

RC (Ready-Code) indicates the "tape" status of the record. The following codes are currently being used.

- R = record is ready to be placed on tape to NASA
- S = record has been sent to NASA on previous tape

A blank entry or one which contains a code other than the above indicates the record either has not been completed and reviewed.

3. DATA VERIFICATION

This phase of the project begins when all data have been entered and the full report printed. The Verification Record Form should be used to record all necessary changes.

The Verification Record Form has seven items which should be completed when recording a change.

PG# -- The computer-generated page number on which the record appears in the report.

RECORD NUMBER -- The number which was assigned during the Data Entry phase.

COUNTRY -- The numeric code assigned to the country of origin.

Country Codes

01 Australia	02 Canada	03 China
04 Denmark	05 East Germany	06 Finland
07 France	08 Japan	09 Mexico
10 New Zealand	11 Norway	12 South Africa
13 Spain	14 Sweden	15 Switzerland
16 United Kingdom	17 U.S.A.	18 U.S.S.R.
19 West Germany	20 Italy	21 Belgium
22 Netherlands	23 Portugal	30 ISO

RECORD STATUS CODE -- The two-digit code listed at the bottom of the Verification Record Form corresponding to the data category. (E.g., "01" indicates a change of some kind in the Designation field.)

RECORD STATUS CORRECTION -- The correct data for that field. (See the Record Layout for list of field names.)

RECORD CORRECTED -- Upon making the correction as specified on the Verification Record Form, the person keying the change should write his/her initials and the date the change was keyed.

TOTAL RECORDS -- When all spaces of the Verification Record Form have been used, the total number of records (not the number of changes) should be written in the space in the upper right corner of the form.

SAMPLE VERIFICATION RECORD FORM ENTRIES

PG#	RECORD NUMBER	COUNTRY	VERIFYING DOCUMENT	RECORD STATUS CODE	CORRECTION	RECORD CORRECTED
15	1345	17	ASTM B209	10	Min-Si=0.1	XX mm/dd/yy
39	7782	17	AMS 3099	11	Min-Yld=315	XX mm/dd/yy
				01	218.5	XX mm/dd/77

Occasionally, the situation arises when the same change must be made to a several records. In such cases, this problem should be recorded on an ALLOY DATABASE PROJECT PROBLEM REPORT and will be resolved by Data Control.

VERIFICATION RECORD TOTAL RECORDS: _____

PG#	RECORD NUMBER	COUNTRY	VERIFYING DOCUMENT	RECORD STATUS CODE	CORRECTION	RECORD CORRECTED

(RECORD STATUS CODES)

00 NO CHANGE	04 COUNTRY NAME	08 STATUS	12 TENSILE STRG.
01 DESIGNATION	05 COUNTRY CODE	09 SPECIFICATION	13 IRR DESIG.
02 FORM	06 US EQUIVALENT	10 COMPOSITION	14 DATA REF.
T2 CONDITION	07 ORIGINATING ORG.	11 YIELD STRG.	15 NOTES
03 UNS NO.	EC EQV CONDITION	RC READY-CODE	D DUPLICATE

VERIFICATION FORM GUIDELINES

"PG#" refers to the computer-generated page number on which the alloy data appear in the report.

"Record Number" refers to the four-digit number assigned to the record in the data file.

"Country" refers to the numeric code assigned to the country from which the alloy originated. (U.S. code is "17".)

"Verifying Document" indicates the publication used to verify information for the alloy.

"Record Status" indicates whether the record is in a correct or an incorrect status. The record status codes are listed at the bottom of each verification record form. The two-digit number corresponding to the field in question should be listed on the verification form under the "code" heading and the correct information should be written under the "correction" heading.

E.g., a record with an incorrect designation code of 1111 which should have read 2222 would appear as follows on the verification form:

RECORD NUMBER	COUNTRY	VERIFYING DOCUMENT	RECORD CODE	STATUS CORRECTION	RECORD CORRECTED
####	co	document	01	2222	xx date

In such cases when there are errors in a field containing multiple items of information such as Composition, Yield Strength, Tensile Strength, etc. the code should be listed and all necessary corrections listed individually on the following lines.

E.g., the above record also contained a minimum value of .40 for zinc which should have been .04, a maximum value of .55 for copper which should have been .50 and a minimum value of .19 for iron which should have been .10. The verification form would then show:

RECORD NUMBER	COUNTRY	VERIFYING DOCUMENT	RECORD CODE	STATUS CORRECTION	RECORD CORRECTED
####	co	document	01	2222	xx date
			10	min-ZI = .04	xx date
				max-CU = .50	xx date
				min-FE = .10	xx date

(NOTE: Aluminum composition percentage should contain a minimum value "REM" [for Remainder] unless otherwise specified in the composition table.)

Verification Form Guidelines

Record Status Code "D" indicates duplicate record. Such records may

be of three types:

Type I Record is identical to another record.
Action: Delete the duplicate.

Type II Alloy has entries for multiple Tempers.
Action: Enter one record from each Temper class.
Delete any subsequent records for the alloy.

Type III* Temper class has multiple thicknesses. Action: Note [notes] the "Mechanical Property Limits are based on thicknesses having minimum value 'x'" ('x' = smallest thickness range). Enter the corresponding Yield [11] and Tensile [12] strengths for that thickness. Delete subsequent records for that alloy and temper.

The Specification code (09) should be used to add or correct data in the spec field.

1. Specs should be listed with the most fundamental ones first.
2. Standard naming conventions should be used from one record to the next.

a. Use spaces (which should be notated by " ") instead of a period.

b. Check to see that every spec consists of the issuing standards organization's abbreviation followed by the specification number.
(E.g., ASTM B209)

"Record Corrected" should contain the initials of the person making the correction and should have the date on which the correction was made.

*Items in [] should be written under the "Code" heading on the Verification Record Form.

DATA SHEET GLOSSARY

FADB - Fisk Alloy Database Reference Number (or RECNO, record number).

This is an arbitrary sequential number which is used for bookkeeping purposes. Each sheet should have a unique number assigned to it before it is filled out. The database program will not allow duplicated FADB numbers.

UNS - Unified Numbering System

This stands for Unified Numbering System, and is a general numbering system designed to provide one common unique designation for an alloy that may be known by several different designations under various systems of nomenclature.

DESIG - Designation

An alloy designation is the name by which it is identified. Since the same alloy may be described by several standards organizations which have different systems of nomenclature, it may have several identifying designations. It is important that the designations for a given alloy be included under the specifications heading. In general, for U.S. alloys the Aluminum Association of America designation will be used.

FORM - Form

This indicates the shape or type of product into which the alloy is made. The form is usually specified by one of the specifications. One designation may have several forms, requiring separate records.

CONDITION - Condition

The physical properties of an alloy are in part determined by heat treatments and work or strain hardening after the alloy is formed. The history of work hardening and treatments that a particular alloy has undergone in reaching its final useable state is called its condition.

Typical conditions for Aluminum are :

- F - As fabricated
- O - Annealed/recrystallized - May be followed by an integer indicating how it was annealed.
- H# - Strain hardened, where # represents an integer designation of the type of treatment applied to the alloy.
- T - thermally treated to produce stable tempers other than F, O, or H, followed by a digit or digits indicating specific treatments applied.
- W - Solution heat treated - An unstable temper applicable to alloys which spontaneously age at room temperature after solution heat treatment. May be followed by a value indicating the period of natural aging, eg. W 1/2 hr.

Tempering affects certain physical properties, so different conditions of the same alloy will require separate data sheets. Although the same principles apply to steel alloys as for aluminum, the coding for steel conditions is not simply achieved. This is due mostly to the more complex nature of steel alloys. Refer to the table - "Steel Conditions" for a list of condition and condition codes used in the database.

EQVCOND - Equivalent Condition

This field is used to cross reference similar foreign and domestic treatments.

Originating Organization -

This is the company or governmental organization that has introduced the alloy.

Country of Origin - The country in which the originating organization is located.

Both the country and its two digit code should be entered on the datasheet. These codes include:

C Data definition for Country Codes Table

1 = Australia	2 = Canada	3 = China	4 = Denmark
5 = East Germany	6 = Finland	7 = France	8 = Japan
9 = Mexico	10 = New Zealand	11 = Norway	12 = South Africa
13 = Spain	14 = Sweden	15 = Switzerland	16 = United Kingdom
17 = USA	18 = USSR	19 = West Germany	20 = Italy
21 = Belgium	22 = Netherlands	23 = Portugal	30 = ISO

U. S. Equivalent -

For foreign alloys, the designation of the closest United States equivalent. If this is given in the reference, include it. If a U.S. equivalent is unknown, this should be left blank. The designation of the equivalent alloy should be written using the same rules for entering alloy designations so that a search on this field will find a match if it exists.

Specifications -

The specifications for an alloy are the set of procedures and tests that completely define it. The specifications may refer to the title of a specifying document, such as an ASTM number, or an alternate designation by which the alloy is also known.

Composition -

The composition is the proportion of chemical elements that make up the alloy. This will usually be specified as a range of minimum and maximum percentages of the elements the alloy. These percentages may be specified as either a weight percent or an atomic number percent, i.e., relative numbers of atoms of each element in the mixture.

Yield Strength - When forces are applied to a bar which tend to stretch it, the bar undergoes deformations or strains. These strains are proportional to the applied forces when they are small, and the bar will return to its original length when the forces are removed. As the tensile forces grow, however, a point will be reached where the bar undergoes a disproportionate increase in length and suffers permanent distortion. The force at which this inelastic deformation occurs is called the metal's yield strength. It will have units of force / area, usually in Mega-Pascals (MPa) or thousands of pounds per square inch (ksi). Yield strengths will in general be specified within a maximum-minimum range or be given as typical values.

Tensile strength - This quantity refers to the tensile or longitudinal stress at which the cohesive forces within the metal decrease suddenly, but before the metal actually fractures. It will have the same units as the yield strength.

SCC Rating - Stress Corrosion Cracking Rating - This is a letter code which indicates the susceptibility of an alloy to surface crack formation in a corrosive environment.

FORMS USED FOR DATABASE PREPARTION

ALLOY DATASHEET:

This form is used as the basic record of data taken from standards and specifications. Once completed, the datasheet will be used as the source for a single record on the database.

MULTIPLE ENTRY ALLOY DATASHEET:

This form is used when a new record which has similar characteristics as an existing record is to be created. A new record number is assigned as with the Alloy Data Sheet. The master record number (record being copied) must also be written in the appropriate area. However, unlike with the Alloy Data Sheet, only those fields to be changed need be re-keyed. (E.g., it would not be necessary to repeatedly enter composition values for new records created in this manner.)

PROBLEM REPORT:

Occasionally, records contain errors of the same type. Example, the form shown in a record should correspond to those listed on the FORM LIST. Required changes may be done globally using Datatrieve as opposed to making changes one by one using JSMAINDUP. The records in error are recorded on the Problem Report form and recommended actions are determined on a group basis.

STANDARDS ASSESSMENT:

This form is used to record special relavant information about specific standards.

VERIFICATION RECORD FORM

After all data have been entered, a report is generated. It is necessary to verify the accuracy of the stored data. This is achieved through the use of the Verification Record Form. All required changes are recorded here and keyed at a later date.

ALLOY DATA SHEET

FADB-NO. _____

Designation _____ UNS No. _____

Alt Desig _____ IRR No. _____

Form _____

Condition _____

AlType _____ AICat _____

Country Name _____ Code _____ Orig. Org. _____

U.S. Equiv _____ US Eqv. Condition _____

Specifications: 1) _____ 2) _____

3) _____ 4) _____ 5) _____

COMPOSITION Wt% 1

Element	Min	Max	Element	Min	Max
Al	_____	_____	Pb	_____	_____
Si	_____	_____	Sn	_____	_____
Fe	_____	_____	C	_____	_____
Cu	_____	_____	Co	_____	_____
Mn	_____	_____	Mo	_____	_____
Mg	_____	_____	W	_____	_____
Zn	_____	_____	P	_____	_____
V	_____	_____	S	_____	_____
Ti	_____	_____	B	_____	_____
Zr	_____	_____		_____	_____
Cr	_____	_____		_____	_____
Ni	_____	_____		_____	_____

MECH PROPERTY	MIN	MAX	TYPICAL	UNITS
Yield Strength	_____	_____	_____	_____
Tensile Strength	_____	_____	_____	_____
Hardness	_____	_____	_____	_____
% Elongation	Long _____	Trans _____	Test piece: _____	

Mech Prop Notes: _____

SCC RATING: _____

Data References: Eqvref _____ Cref _____ MPref _____

Notes: _____

OPERATOR: _____

MULTIPLE ENTRY ALLOY DATASHEET

Master Designation: _____

New Record Number: _____ Master Record Number: _____

CHANGES

Designation: _____

Form: _____

Condition: _____

UNS No. : _____ Alt Desig: _____

US Equiv Desig: _____

US Equiv Cond: _____

Orig. Org : _____

Spec1: _____ Spec2: _____

Composition:

Element

Min

Max

Element	Min	Max
_____	_____	_____
_____	_____	_____
_____	_____	_____

Min-Yld: _____ Max-Yld: _____ Typ-Yld: _____

Min-Tns: _____ Max-Tns: _____ Typ-Tns: _____

Min-Hrd: _____ Max-Hrd: _____ H-Units: _____

%Elongation: _____ Test Piece: _____

Mech Prop Notes: _____

Eqvref: _____ CRef: _____ MRef: _____

Notes: _____

OPERATOR:

STANDARDS ASSESSMENT FORM
Fisk Alloy Database

COUNTRY: _____ ALLOY CATEGORY: _____

STANDARD NUMBER: _____ ISSUE DATE: _____

TITLE: _____

FORMS: _____

COMPARABLE STANDARDS:

U.S. STANDARDS

FOREIGN STANDARDS

REMARKS:

APPENDIX D - ABBREVIATIONS

ORGANIZATIONAL ABBREVIATIONS

AA	The Aluminum Association
AFC	A.F.C., Societe des
AIA	Apex International Alloys Inc.
AISI	American Iron and Steel Institute
ALCAN	Aluminum Co. of Canada, Ltd.
ALPAX	Alais, F
AMS	Aerospace Materials Specifications
AP	Aluminum Pechiney
AS	Standards Association of Australia
ASM	American Society for Metals
ASTM	American Society for Testing Materials
AWS	American Welding Society
BSI	British Standards Institute
CSA	Canadian Standards Association
CTC	Carpenter Technology Corp.
DIN	Deutsches Institut fur Normung
DOD	Department of Defense
DS	Dansk Standardiseringsrad
DTD	Department of Trade and Industry
GE	Gillett & Eaton Inc.
GI	Gould Inc., Engine Parts Division
GOST	Staatliches Komitee fur Standardisierung
HDA	High Duty Alloys Ltd.
HW	Honsel-Werke AG., Leichtmetallwerke

IRR	International Registration Record
ISO	International Standards Organization
JIS	Japanese Industrial Standards
KLAL	Koch Light Alloys Ltd.
MCIC	Metals and Ceramics Information Center
MNC	Metallnormcentralen
MSA	Montecatini Settore Alluminio
NBN	Belgium Standards
NEN	Nederlands Normalisatie-instituut
NF	Association Francaise de Normalisation
NS	Norwegian Standards Association
SAE	Society of Automotive Engineers Inc.
SAL	Swiss Aluminum Ltd.
SIS	Svensk Standard
SML	Sterling Metals Ltd.
SN	Schweizer Norm
STONE	Stone Manganese Marine
UNE	Instituto Espanol De Normalization
UNI	Ente Nazionale Italiano Di Unificazione
USA	United States of America
VASA	Veneto per Azioni, Soc. Alluminio
VDS	Vereinigung Deutscher Schmelzhutten
VL	Vereinigte Leichtmetallwerke
WL	Werkstoff-Leistungsblatt

STEEL CONDITION ABBREVIATIONS

AC = AUSTENITE CONDITIONED

AUSTN = AUSTENITIZED

BF = BRIGHT FINISHED

BRI = BRIGHT

CD = COLD DRAWN

CF = COLD FINISHED

CR = COLD ROLLED

CW = COLD WORKED

DECAR = DECARBURIZED

GRND = GROUND

HDN = HARDENED

HDTMP = HARD TEMPERED

HF = HOT FINISHED

HOMOGEN = HOMOGENIZED

HR = HOT ROLLED

HTR = HEAT TREATED

INTMP = INTERMEDIATE TEMPERED

NA = NOT APPLICABLE

NF = NOT FOUND

NORM = NORMALIZED

NS = NOT SPECIFIED

NWH = NO WORK HARDENING

PHDN = PRECIPITATION HARDENED

PHTR = PRECIPITATION HEAT
TREATED

Q = QUENCHED

RVA = REVERSION ANNEALED

SFT = SOFTENED

SHTR = SOLUTION HEAT TREATED

SPH = SPHEROIDIZED

STR = STRESS RELIEVED

STRAINHDN = STRAIN HARDENED

TMP = TEMPERED

APPENDIX E - PROGRAM LISTINGS

```
C*****
C
C           CONTROL PROGRAM (MAIN PROGRAM)
C
C Program Name:      NASAMAIN.FOR
C Date Written:      August, 1985
C Designer/Programmer: Joseph K. Amanfu, Fisk University, Nashville
C Revised by:       J. M. Springer
C                   9/1/88 - Changed default domain to STEEL
C This Program Displays the Main Menu: After a Processing Option has
C been selected by the user, the program Calls the corresponding
C Subroutine
C
C*****
C
C The following subroutines are available:
C
C 1. SUBROUTINE CHOOSE: - Shows available domains and prompts the
C                        User to select a domain name to be Readied
C
C 2. SUBROUTINE DELETE: - Enables the user to PERMANENTLY remove
C                        records from the database
C
C 3. SUBROUTINE INSERT: - Enables the user to insert new records into
C                        the database
C
C 4. SUBROUTINE MODIFY: - Enables the user to modify one or more
C                        fields within one or more records
C
C 5. SUBROUTINE REPORT: - Enables the user to generate an unlimited
C                        number of reports from the data base;
C
C                        Such reports may be displayed on the video
C                        screen or printed on a local printer
C
C NOTES:
C
C   Subroutine features 2, 3, and 4 are restricted operations;
C   only users with specific access rights may use them
C
C*****

100 INCLUDE 'DTR$LIBRARY:DAB'

C Declare Variables
CHARACTER*31 DOMAIN
CHARACTER*1 CHOICE
CHARACTER*2 ANSWER
INTEGER STATUS

C Initialize the DATATRIEVE Call Interface
CALL LIB$ERASE_PAGE (1,1)
type *, ' '
type *, 'Please stand by'
type *, ' '
INIT OPTS =
1 +DTR$K_SEMI COLON OPT
2 +DTR$K_UNQUOTED_LIT
```

```

3 +DTR$K SYNTAX PROMPT
200 CALL DTR$INIT (DAB, 100, MSG_BUFF, AUX_BUFF,
1 INIT_OPTS)
C PORT #1
C Declare a PORT PT1 for STOREing the number records in any
C collection to be established by user with an Rse,
C e.g. in SBREPORT

CALL DTR$COMMAND (DAB, 'DECLARE PORT PT1 USING ')
CALL DTR$COMMAND (DAB, '01 NUM PIC 9(4) COMP. ;')
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

C Choose and Ready the Domain

300 CALL LIB$ERASE_PAGE (1,1)
type *, ' '
type *, 'Please stand by'
DOMAIN = 'COPPER' ! New file with fadb-no primary key
! and all character record
CALL DTR$COMMAND (DAB, 'READY !CMD SHARED;', DOMAIN)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
C Clear the Screen and Build the Main Menu
600 CALL LIB$ERASE_PAGE (1,1)
700 TYPE 750, DOMAIN
750 FORMAT (T29, ' WELCOME TO THE'
1 /T18, ' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1 /T23, 'Default domain = ', A
2 //' Main Features:'
3 /' -----'
4 //T15, 'I = Insert New Records Into The Database'
6 //T15, 'D = Delete One or More Records From The Database'
5 //T15, 'M = Modify Existing Record[s] '
7 //T15, 'S = Search Database To Display or Print Reports'
8 //T15, 'C = Select or Change Domain'
9 //T15, 'H = Help - I Need Guidance'
A //T15, 'E = Exit - if Finished Using the System'
B //T15, 'Please Enter The Letter Corresponding To Your Choice'
C /T15, 'Then Hit the RETURN Key')

800 ACCEPT 850, CHOICE
850 FORMAT (A)

IF ((CHOICE .EQ. 'I') .OR. (CHOICE .EQ. 'i')) THEN
CALL JSINMOD(DOMAIN, 1)
ELSE IF ((CHOICE .EQ. 'D') .OR. (CHOICE .EQ. 'd')) THEN
CALL JSDELETE (DOMAIN)
ELSE IF ((CHOICE .EQ. 'M') .OR. (CHOICE .EQ. 'm')) THEN
CALL JSINMOD(DOMAIN, 2)
ELSE IF ((CHOICE .EQ. 'S') .OR. (CHOICE .EQ. 's')) THEN
CALL jsREPORT (DOMAIN)
ELSE IF ((CHOICE .EQ. 'C') .OR. (CHOICE .EQ. 'c')) THEN
CALL jsCHOOSE (DOMAIN)
GO TO 600
ELSE IF ((CHOICE .EQ. 'H') .OR. (CHOICE .EQ. 'h')) THEN
CALL LIB$ERASE_PAGE (1,1)
CALL LIB$SPAWN ('fullhelp')
ELSE IF ((CHOICE .EQ. 'E') .OR. (CHOICE .EQ. 'e')) THEN
CALL DTR$FINISH (DAB)
CALL LIB$ERASE_PAGE (1,1)
TYPE 1000
1000 FORMAT (' Goodbye ... exiting to the operating'
1 ' system')

```



```

GO TO 9999

ELSE
    type *,'Wrong selection, Please hit RETURN to try again'
    accept 2000,answer
2000    format (A)
    END IF
    CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
    CALL DTR$COMMAND (DAB, 'FINISH !CMD;',DOMAIN)
    GO TO 200
9999 END

```

```

C*****
C          SUBROUTINE CHOOSE                                *
C          *                                               *
C Module Name:          SBCHOOSE.FOR                      *
C Date Written:         August XX, 1985                   *
C Designer/Programmer: Joseph K. Amanfu, Fisk University, Nashville *
C Modified by J. Springer - 1987,88                       *
C The module shows the domains available in the current dictionary *
C and prompts the user to ready a domain.                 *
C If the domain name is invalid or the domain cannot be readied, the *
C program reprompts for another domain name.              *
C          *                                               *
C Revised: 5/17/88 - js (Finish any readied domains)      *
C          6/22/88 - js (Finish only previous data domain)
C*****

```

SUBROUTINE JSCHOOSE (DOMAIN)

```

INCLUDE 'DTR$LIBRARY:DAB'
CHARACTER*31 DOMAIN
CHARACTER*2 ANSWER
LOGICAL NO_DOMAIN/.TRUE./
CALL DTR$COMMAND(DAB,'FINISH !CMD;',DOMAIN)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

```

100 DO WHILE (NO_DOMAIN)

```

150    TYPE 200
200    FORMAT (' Do you wish to see Domain Names?'
1      /' Please respond with Y or N '/')
300    ACCEPT 400,ANSWER
400    FORMAT (A)

```

C Input Error-Trap

```

1      IF (((ANSWER .NE. 'Y') .AND. (ANSWER .NE. 'y')) .AND.
          ((ANSWER .NE. 'N') .AND. (ANSWER .NE. 'n'))) THEN
    type *,'Wrong entry, please hit RETURN and try again'
    accept 450,answer
450    format (A)
    GO TO 150
    END IF
    IF ((ANSWER .EQ. 'Y') .OR. (ANSWER .EQ. 'y')) THEN
500    CALL DTR$COMMAND (DAB, 'SHOW DOMAINS;')
    END IF

```

C Select DTR Options

```

1020 CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

```

C Ask the user for the domain and ready it.

```

1030     TYPE 1040
1040     FORMAT (' Enter the name of the domain you'
1         ' want to use,'
2         '/ ' or just enter R to return to'
3         ' the Main Menu:'
4         '// ' Domain Name = ', $)

1050     ACCEPT 1060, DOMAIN
1060     FORMAT (A)

        IF ((DOMAIN .EQ. 'R') .OR. (DOMAIN .EQ. 'r')) THEN
            go to 9999
        END IF

        type *, ' '
        type *, 'Searching for Domain, Please stand by'

1070     CALL DTR$COMMAND (DAB, 'READY !CMD SHARED WRITE;', DOMAIN)
1080     CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

```

C Check for an error in readying the domain; reprompt if any errors.

```

1090     IF (DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) THEN
        TYPE I100
1100     FORMAT (' Error: Try domain name again....')
        ELSE
            NO_DOMAIN = .FALSE.
        END IF
    END DO
    NO_DOMAIN = .TRUE.
    CALL LIB$ERASE PAGE(1,1)
    CALL DTR$COMMAND(DAB, 'SHOW READY;') !Let's see ready domains
    CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
    WRITE (6, 1095)
1095     FORMAT (//, 5x, 'This is your readied domain, type RETURN to
1         ' proceed.')
    READ (5, 2090) ANSWER
2090     FORMAT (A)
    RETURN
9999     END

```

```

C*****
C                               SUBROUTINE COUNTRY                               *
C                                                                                   *
C Module Name:                   SBCNTRY.FOR                                       *
C Date Written:                   August XX, 1985                                   *
C Designer/Programmer:           Joseph K. Amanfu, Fisk University, Nashville     *
C                                                                                   *
C                                                                                   *
C*****

```

```

C23456789012345678901234567890123456789012345678901234567890123456789012
C      1           2           3           4           5           6           7

```

SUBROUTINE JSCNTRY (cntry, icntry, Xcntry)

```

character*2 cntry
character*15 Xcntry
CHARACTER*15 CNTRIES (31)

```

integer Icntry

C Data definition for Country Codes Table

```
DATA CNTRIES/'Australia','Canada','China','Denmark',
1 'East Germany','Finland','France','Japan','Mexico',
2 'New Zealand','Norway','South Africa','Spain','Sweden',
3 'Switzerland','United Kingdom','U.S.A.','U.S.S.R.',
4 'West Germany','Italy','Belgium','Netherlands',
5 'Portugal',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' ',' 'ISO','Cntry Not Known'/
```

C Prepare subscript for country literals table

```
100  IF      ((CNTRY .EQ. '01') .OR. (CNTRY .EQ. '1')) THEN
        ICNTRY = 1
     ELSE IF ((CNTRY .EQ. '02') .OR. (CNTRY .EQ. '2')) THEN
        ICNTRY = 2
     ELSE IF ((CNTRY .EQ. '03') .OR. (CNTRY .EQ. '3')) THEN
        ICNTRY = 3
     ELSE IF ((CNTRY .EQ. '04') .OR. (CNTRY .EQ. '4')) THEN
        ICNTRY = 4
     ELSE IF ((CNTRY .EQ. '05') .OR. (CNTRY .EQ. '5')) THEN
        ICNTRY = 5
     ELSE IF ((CNTRY .EQ. '06') .OR. (CNTRY .EQ. '6')) THEN
        ICNTRY = 6
     ELSE IF ((CNTRY .EQ. '07') .OR. (CNTRY .EQ. '7')) THEN
        ICNTRY = 7
     ELSE IF ((CNTRY .EQ. '08') .OR. (CNTRY .EQ. '8')) THEN
        ICNTRY = 8
     ELSE IF ((CNTRY .EQ. '09') .OR. (CNTRY .EQ. '9')) THEN
        ICNTRY = 9
     ELSE IF (CNTRY .EQ. '10') THEN
        ICNTRY = 10
     ELSE IF (CNTRY .EQ. '11') THEN
        ICNTRY = 11
     ELSE IF (CNTRY .EQ. '12') THEN
        ICNTRY = 12
     ELSE IF (CNTRY .EQ. '13') THEN
        ICNTRY = 13
     ELSE IF (CNTRY .EQ. '14') THEN
        ICNTRY = 14
     ELSE IF (CNTRY .EQ. '15') THEN
        ICNTRY = 15
     ELSE IF (CNTRY .EQ. '16') THEN
        ICNTRY = 16
     ELSE IF (CNTRY .EQ. '17') THEN
        ICNTRY = 17
     ELSE IF (CNTRY .EQ. '18') THEN
        ICNTRY = 18
     ELSE IF (CNTRY .EQ. '19') THEN
        ICNTRY = 19
     ELSE IF (CNTRY .EQ. '20') THEN
        ICNTRY = 20
     ELSE IF (CNTRY .EQ. '21') THEN
        ICNTRY = 21
     ELSE IF (CNTRY .EQ. '22') THEN
        ICNTRY = 22
     ELSE IF (CNTRY .EQ. '23') THEN
        ICNTRY = 23
     ELSE IF (CNTRY .EQ. '24') THEN
        ICNTRY = 24
     ELSE IF (CNTRY .EQ. '25') THEN
```

```

ELSE IF ICNTRY = 25
(CNTRY .EQ. '26') THEN
ICNTRY = 26
ELSE IF (CNTRY .EQ. '27') THEN
ICNTRY = 27
ELSE IF (CNTRY .EQ. '28') THEN
ICNTRY = 28
ELSE IF (CNTRY .EQ. '29') THEN
ICNTRY = 29
ELSE IF (CNTRY .EQ. '30') THEN
ICNTRY = 30
ELSE
ICNTRY = 31
END IF
Xcntry = cntries (icntry)
RETURN
END

```

```

C*****
C
C          SUBROUTINE JSINMODUP
C
C Program Name:      JSINMODUP.FOR
C Date Written:     September, 1986
C Designer/Programmeer, J. Springer, Fisk University, Nashville, TN
C Created:         11/26/86
C Revised:        3/27/87
C                 6/21/88 - Added preset status code
C                 8/2/88 - Put READY WRITE command at beginning,
C                        SET CONTROL=Y at end of routine
C
C                 8/9/89 - Modified for 833 byte record structure
C This subroutine accesses the full screen display subroutine SCRNTR
C to all either insertion or modification of records in the database.
C and also for changing record numbers and duplicating rest of record.
C*****

```

```

SUBROUTINE JSINMOD (DOMAIN,IM) ! IM = 1 for insert, 2 for modify
! 3 for duplicate with new record no.
C Include the DATATRIEVE Access Block

```

```

INCLUDE 'DTR$LIBRARY:DAB'
INCLUDE 'IODRVCOM'
INCLUDE 'DATABUFF'
INCLUDE 'CONTROLY'

```

C Declarations, etc.

```

EXTERNAL DTR$ SHOWTEXT
EXTERNAL DTR$ ERROR
EXTERNAL SSS NORMAL

```

```

CHARACTER*836 DATAREC !Holds data record
CHARACTER*31 DOMAIN
CHARACTER*1 XC !DEBUG TEST CHARACTER
INTEGER*2 I
INTEGER*4 DTR_OPTIONS,RECNO,RECNO DUP
INTEGER*4 NUM_RECS
INTEGER*4 PGLN, PGWIDE
INTEGER RET_STATUS
CHARACTER*9 OPS
CHARACTER*8 FILE

```

CHARACTER*7 INDEX,INDEXDUP
EQUIVALENCE (FULLREC(1:1),DATAREC(1:1))

C Initialize arrays, etc.
DATA File /'DATAFILE'/
CALL INIT_ARRAYS (file)
CALL INIT_IODRIVER
MODIFY = 'Modify'
INSERT = 'Insert'
NORMAL = 'Normal'
FAILED = 'Failed'
COMPLETE = 'Complt'

C Select DTRSDTR Options:

DTR_OPTIONS =
1 DTRSM_OPT_CMD ! Return on DTRSK STL_CMD
2 + DTRSM_OPT_CONTROL C ! Enable Control C Handling
3 + DTRSK_UNQUOTED_LIT ! Assumes a string is a literal

400 CALL LIBSERASE_PAGE (1,1)

CALL DTRSCOMMAND (DAB,'READY !CMD SHARED WRITE;',DOMAIN)
CALL DTRSDTR(DAB,DTRSM_OPT_CMD)

C Include file to declare port2

INCLUDE '[NASA3.JSEXREC]JSPORT25.INC'
NUM RECS = 0 !Initialize to zero
IF (IM .EQ. 1) THEN
OPS = 'Insert'
ELSE IF (IM .EQ. 2) THEN
OPS = 'Modify'
ELSE
OPS = 'Duplicate'
END IF

200 WRITE (6,201),OPS
201 FORMAT (1X,'Enter record number to ',(A),' [use negative
1 value to exit]')
READ (5,202) INDEX
202 FORMAT (A)
READ (INDEX,'(I)') RECNO
IF (RECNO .LE. 0) GOTO 9999
type *,'
type *,'Searching for record, please stand by'

C Clean up data buffers

DO 10500 I = 1,836
10500 DATAREC(I:I) = ' '

10310 CALL DTRSCOMMAND (DAB, 'FIND !CMD WITH FADB_NO = !CMD;',
1 DOMAIN,INDEX)

CALL DTRSDTR (DAB, DTRSM_OPT_CMD)

C Check for possible datatrieve errors

IF ((DABSL_CONDITION .NE. %LOC(DTR\$_SUCCESS)) .OR.
1 (DABSL_CONDITION .EQ. %LOC(DTR\$_ERROR))) THEN
GO TO 90100
END IF

C Investigate the number of records found,
C if no records were found then return to try another Rse

```

10320 CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')

      IF (DAB$W_STATE .EQ. DTR$K_STL_PGET) THEN
          CALL DTR$GET_PORT (DAB, NUM_RECS)
          CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      END IF
      IF ((NUM_RECS .EQ. 0) .AND. (IM .EQ. 1)) IDIR = 1
      IF ((NUM_RECS .NE. 0) .AND. (IM .EQ. 1)) IDIR = 2
      IF ((NUM_RECS .EQ. 0) .AND. (IM .EQ. 2)) IDIR = 3
      IF ((NUM_RECS .NE. 0) .AND. (IM .EQ. 2)) IDIR = 4
      IF ((NUM_RECS .EQ. 0) .AND. (IM .EQ. 3)) IDIR = 5
      IF ((NUM_RECS .NE. 0) .AND. (IM .EQ. 3)) IDIR = 6
      GOTO (310, 320, 330, 340, 330, 340), IDIR

310      DATAREC(31:37) = INDEX !Enter index in data buffer
      DATAREC(114:123) = 'VECM T' !Initial Status code
      DATAREC(826:836) = 'TODAY'
      GOTO 1000 !Now goto screen entry routine
320      WRITE (6,321)
321      FORMAT (1X, 'This record already exists. Duplicate record
2          numbers are not allowed. Reenter if there was
3          a typing error.')
      GOTO 200

330      WRITE (6,331)
331      FORMAT (1X, 'Record with this index number does not exist')
      GOTO 200

340      CONTINUE !Now pick up record to modify
      NUM_RECS = 0 ! Reinitialize

10400 CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')

C Check for possible datatrieve errors

      IF ((DAB$SL_CONDITION .NE. %LOC(DTR$ SUCCESS)) .OR.
1      (DAB$SL_CONDITION .EQ. %LOC(DTR$ ERROR))) THEN
          CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
          type *, 'DTR ERROR'
          type *, 'Just hit RTN to continue'
          accept 10405, answer
10405      format (A)
          GOTO 200
      END IF

11200 CALL DTR$GET_PORT (DAB, %REF(DATAREC))

C At this point we have a record to modify or duplicate
      IF (IM .EQ. 3) THEN
403      WRITE (6,490)
490      FORMAT(1X, 'Enter new record number for duplicate.',/
1          '(Negative value returns to menu)',/)
          READ (5,491) INDEXDUP
491      FORMAT (A)
          READ (INDEXDUP, '(I)') RECNODUP
          IF (RECNODUP .LE. 0) GOTO 9999
          type *, ' '
          type *, 'Searching for record, please stand by'

10312 CALL DTR$COMMAND (DAB, 'FIND !CMD WITH FADB_NO = !CMD;',
1      DOMAIN, INDEXDUP)

```

```

CALL DTRSDTR (DAB, DTRSM_OPT_CMD)

C Check for possible datatrieve errors

    IF ((DABSL_CONDITION .NE. %LOC(DTR$ SUCCESS)) .OR.
1     (DABSL_CONDITION .EQ. %LOC(DTR$ ERROR))) THEN
        GO TO 90100
    END IF

C Investigate the number of records found,
C if any records were found, then cannot use given number
    call dtr$dtr(dab,dtr$m_opt_cmd)
10322 CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')

    IF (DAB$W STATE .EQ. DTR$K_STL_PGET) THEN
        CALL DTR$GET_PORT (DAB, NUM_RECS)
        CALL DTRSDTR (DAB, DTRSM_OPT_CMD)
C     type *, 'Numrecs', num_recs
    END IF

    IF (NUM_RECS .NE. 0 ) THEN
        WRITE(6,493)
493     FORMAT (1X, 'The record number you want to use exists; ',
1         /' duplicate record numbers are not allowed. ')
        GOTO 403
    END IF
    DATAREC (31:37) = INDEXDUP           !Insert new record number
    DATAREC (114:123) = 'VECMD         T' !Status code
    DATAREC (825:825) = ' '             !Blank ready code
    END IF
    DATAREC (826:836) = 'TODAY'
1000    CONTINUE
580    CALL Q_AST_CTRLY
        CALL SCRNTNTR
        CALL LIB$ERASE PAGE (1,1)
585    IF (.NOT. CTRL_Y) THEN
        CALL DQ_AST_CTRLY
        IF (Succ .EQ. NORMAL) THEN
            Succ = Flag
C     If modify, delete old record and save new version
C     If insert, just save new record
        IF ((IM .EQ. 1) .OR. (IM .EQ. 3)) GOTO 587
        CALL DTR$COMMAND(DAB, 'SHOW ALL')
        CALL DTRSDTR(DAB, DTRSM_OPT_CMD)
        CALL DTR$COMMAND(DAB, 'FIND !CMD WITH RECNO = !CMD',
1     DOMAIN, INDEX)
        CALL DTRSDTR(DAB, DTRSM_OPT_CMD)
        CALL DTR$COMMAND(DAB, 'ERASE ALL')
        CALL DTRSDTR(DAB, DTRSM_OPT_CMD)

587    CALL DTR$COMMAND(DAB, 'FOR PORT2 STORE !CMD USING
1     NASAFILE REC = TEMPREC', DOMAIN)
        CALL DTR$PUT_PORT (DAB, %REF(DATAREC))
        IF (DAB$W STATE .EQ. DTR$K_STL_MSG) THEN
            CALL DTRSDTR(DAB, DTRSM_OPT_CMD)
        ELSE
            CALL DTR$PORT_EOF(DAB)
            CALL DTRSDTR(DAB, DTRSM_OPT_CMD)
        END IF
    GOTO 200
    ELSE
        Succ = 'No Update'

```

```

        END IF
    ELSE
590      CALL HEAD SET
        WRITE(6,1001)
        READ(5,1002)I
        IF ( I.EQ.1 ) THEN      ! Yes--Save Data
            CTRLRY=.FALSE.
            GOTO 585
        ELSE IF (I.EQ.2) THEN  ! Drop This Record
            GOTO 200
        ELSE IF (I.EQ.3 ) THEN ! Reedit Same Record
            GOTO 580
        ELSE
            GOTO 590      ! Invalid Entry
        END IF
    END IF

```

```

1001  FORMAT(1H ,///,T30,'Control/Y Detected.',/,
2      T20,'Do You Wish To (1) Save The Data As Is,',/,
2      T36,'(2) Discard The Data,',/,
2      T32,'Or (3) Return To The Entry Screen.')
1002  FORMAT(I1)

```

C Below is the general error message handling routine
C Call the Terminal Server to handle messages at the end of the report

```

90000 CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

```

C If there was any error then prompt user to retry again

```

        IF ((DAB$L_CONDITION .EQ. %LOC(DTR$_SUCCESS)) .AND.
1      (DAB$L_CONDITION .NE. %LOC(DTR$_ERROR))) THEN
            GOTO 200
        END IF

```

```

90100 TYPE 90105
90105 FORMAT (' There was a Datatrieve error,'
1      ' Do you wish to try again?'
2      //' Please respond with Y or N'/)
        accept 90205,answer
90205 format (A)

```

C Input Error-Trap

```

1      IF (((ANSWER .NE. 'Y') .AND. (ANSWER .NE. 'y')) .AND.
        ((ANSWER .NE. 'N') .AND. (ANSWER .NE. 'n'))) THEN
            type *,'Wrong entry, please hit RETURN and try again'
            accept 90305,answer
90305      format (A)
            GO TO 200
        END IF
9999  ISTAT = LIB$SPAWN('SET CONTROL=Y')
        RETURN
        END          !JSINMOD

```

```

C*****
C
C          SUBROUTINE DELETE
C
C
C Module Name:          SBDELETE.FOR
C
C*****

```



```

C Date Written:      August XX, 1985      *
C Designer/Programmer: Joseph K. Amanfu  *
C                                                           *
C This subroutine enables only NASA users with special access *
C privileges to delete records from the database             *
C                                                           *
C*****

```

SUBROUTINE JSDELETE (DOMAIN)

C Include the DATATRIEVE Access Block

```

100 INCLUDE 'DTR$LIBRARY:DAB'
    INTEGER*4    DTR_OPTIONS
    INTEGER*4    NUM_RECS
    INTEGER      NUMBER
    CHARACTER*31 DOMAIN
    CHARACTER*3  PASSWD
    CHARACTER*30 DSGKEY
    CHARACTER*7  FADB
    CHARACTER*2  ANSWER
    CHARACTER*80 EXPRLINE

```

C Select DTR\$DTR Options:

```

    DTR_OPTIONS =
    1  DTR$M_OPT_CMD      ! Return on DTR$K_STL_CMD
    2  + DTR$M_OPT_CONTROL_C ! Enable Control C Handling
    3  + DTR$K_UNQUOTED_LIT ! Assumes a string is a literal
200 CALL LIB$ERASE_PAGE (1,1)
300 TYPE 400
400 FORMAT (T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
    1  // ' Deleting Records:'
    2  // ' -----'
    3  // ' Please Enter your Password'/)

```

C The next library routine will suppress the display of the
C Password input on the screen

CALL LIB\$SPAWN ('SET TERM/NOECHO')

```

500 ACCEPT 600,passwd
600 FORMAT (A3)

```

C Restore the Echo

CALL LIB\$SPAWN ('SET TERM/ECHO')

```

700 IF ((passwd .EQ. 'del') .OR. (passwd .EQ. 'DEL')) THEN
    GO TO 800
ELSE
    type *, ' '
    TYPE *, 'Sorry, Access Privilege Violation'
    TYPE *, 'Hit RETURN to continue'
    ACCEPT 750,ANSWER
750  format (a)
    RETURN
END IF

```

```

800 CALL DTR$COMMAND(DAB,'READY !CMD SHARED WRITE;',DOMAIN)
    CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

```

C Prompt user to select the record to be deleted

CCC 800 CALL LIBSERASE_PAGE (1,1)

```
TYPE 1000
1000 FORMAT (/// ' Enter the FADB_NO of the record you'
1          ' wish to delete,'
3          '/ ' Then hit the RETURN key'/
4          '/ ' [Enter M to return to main menu]')
ACCEPT 1020,FADB
1020 FORMAT (A7)
IF (FADB .EQ. 'M') GOTO 2300
```

```
type *,' '
type *,'Searching for record, Please stand by'
```

C Pass this number to datatrive via DTR\$COMMAND

```
1050 CALL DTR$COMMAND (DAB, 'FIND !CMD WITH FADB-NO = !CMD;',
1 DOMAIN,FADB)
```

C Check for Datatrive errors

```
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
IF ((DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1 (DAB$L_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
type *,'There was a datatrive error'
GO TO 2500
END IF
```

C Make sure the record was found

C Investigate the number of records found,

C if no records were found then return to try another Rse

```
1100 CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')
```

```
IF (DAB$W_STATE .EQ. DTR$K_STL_PGET) THEN
CALL DTR$GET_PORT (DAB, NUM_RECS)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
END IF
```

```
IF (NUM_RECS .EQ. 0) THEN
type *,' '
type *,'That record was not found'
type *,'Please hit RETURN to try again'
accept 1115,answer
```

```
1115 format (A)
RETURN
END IF
```

C We will come here only if record was found

```
CALL DTR$DTR (DAB, 'SELECT;')
```

C List some fields for user confirmation

```
CALL DTR$COMMAND (DAB, 'FOR CURRENT PRINT FADB_NO,
1 DESIG, US EQV;')
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
IF ((DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1 (DAB$L_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
type *,'There was a datatrive error'
GO TO 2500
END IF
```

C Ask for user confirmation before erasing !!! DANGER !!!

```
2130 TYPE 2135
2135 FORMAT (/ ' Are you sure you want to delete the above record(s)?'
1         / ' Please respond with Y or N' /)
```

```
ACCEPT 2140,ANSWER
2140 FORMAT (A)
```

C Input Error-Trap

```
1 IF (((ANSWER .NE. 'Y') .AND. (ANSWER .NE. 'y')) .AND.
((ANSWER .NE. 'N') .AND. (ANSWER .NE. 'n'))) THEN
type *, 'Wrong entry, please hit RETURN and try again'
accept 2145,answer
2145 format (A)
GO TO 2130
END IF
```

```
IF ((ANSWER .EQ. 'N') .OR. (ANSWER .EQ. 'n')) THEN
GO TO 2300
END IF
```

```
2290 CALL DTR$COMMAND (DAB, 'ERASE ALL;')
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
type *, ' '
TYPE *, ' The Record has been deleted'
GOTO 800
2300 CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
2400 CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
2500 TYPE 2600
2600 FORMAT (/ ' Hit the RETURN key to continue')
accept 2700,ANSWER
2700 format (A)
CALL DTR$COMMAND (DAB, 'READY !CMD SHARED;', DOMAIN)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
8888 RETURN
9999 END
```

```
C*****C
C
C SUBROUTINE REPORT
C
C Program Name: SUBREPORT.FOR
C Date Written: August XX, 1985
C Designer/Programmer: Joseph K. Amanfu, Fisk University, Nashville
C
C
C This subroutine enables the user to perform various searches on the
C database and generate an unlimited number and types of reports.
C The reports may be displayed on the video screen or output on a
C printer.
C
C Revised: J. Springer, 1986-87
C Last revision: 10/1/87 to use 762 character record (NASAFIL_REC4)
C Please see the On-Line Help notes for available searches
C Revised: J. Springer, July 1989
C Changed to use NASAFIL_REC5, with 830 characters
C
C*****
```

SUBROUTINE JSREPORT (DOMAIN)

C Include the DATATRIEVE Access Block

```
INCLUDE 'DTR$LIBRARY:DAB'  
C Declarations, etc.  
EXTERNAL      DTR$ SHOWTEXT  
EXTERNAL      DTR$ ERROR  
EXTERNAL      SSS NORMAL  
LOGICAL*1     FINISH /.FALSE./  
LOGICAL*1     OPENPORT /.FALSE./ !Tells if port is open  
CHARACTER*80  REPHEADER  
CHARACTER*255 dtr command  
CHARACTER*80  EXPRLINE  
CHARACTER*80  SHOWFLDS(62)  
CHARACTER*80  PRTFLDS  
CHARACTER*30  DSGKEY  
CHARACTER*30  DSGKEY1  
CHARACTER*30  DSGKEY2  
CHARACTER*2   ANSWER  
CHARACTER*2   CHOICE  
CHARACTER*4   UNITY  
CHARACTER*20  FILENAME  
CHARACTER*7   RECKEY  
CHARACTER*7   Xfadb  
CHARACTER*30  Xdesig  
CHARACTER*25  Xequiv  
CHARACTER*27  Xequiv2  
CHARACTER*2   Xcountry  
CHARACTER*4   XcountryX,CNTRYX  
CHARACTER*15  Xcntry  
CHARACTER*1   dummy  
character*9   reckeyx  
character*9   minalx  
character*9   maxalx  
character*9   minsix  
character*9   maxsix  
character*9   minfex  
character*9   maxfex  
character*9   mincux  
character*9   maxcux  
character*9   minmnx  
character*9   maxmnx  
character*9   minmgx  
character*9   maxmgx  
character*9   minzrx  
character*9   maxzrx  
character*9   MINVx  
character*9   MAXVx  
character*9   mintix  
character*9   maxtix  
character*9   minzrx  
character*9   maxzrx  
character*9   mincrx  
character*9   maxcrx  
character*9   minnix  
character*9   maxnix  
character*9   minpbx  
character*9   maxpbx  
character*9   minsx  
character*9   maxsx  
CHARACTER*2   CNTRY  
CHARACTER*1   CCNTRL  
INTEGER*2     ICNTRY  
INTEGER*4     DTR OPTIONS  
INTEGER*4     NUM_RECS
```

```

INTEGER*4    PGLN, PGWIDE
INTEGER      RET STATUS
INTEGER      RECPRT
INTEGER      IPAGE
INTEGER      PRT,COUNT

```

C FULLREC is the space defined to receive the record from
C the Datatrieve buffer

```

INCLUDE '[NASA3.JSEXREC]FULLREC5.INC'
C test common
COMMON/DATAREC/FULLREC !Holds full datarecord
COMMON/COUNTRY/XCNTRY
COMMON/KOUNTS/IPAGE,RECPRT,CCNTRL,COUNT

```

C Select DTR\$DTR Options:

```

DTR_OPTIONS =
1  _DTR$M_OPT_CMD           ! Return on DTR$K STL_CMD
2  + DTR$M_OPT_CONTROL_C   ! Enable Control C Handling
3  + DTR$K_UNQUOTED_LIT    ! Assumes a string is a literal

```

C Select report options

```

100 CALL LIB$ERASE_PAGE (1,1)

200 TYPE 250
250 FORMAT (T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Report Generation Features:'
2      /' -----'
3      //T8,' 1 = Produce Standard Reports'
4      //T8,' 2 = Build your own reports'
5      //T8,' H = Display help information'
6      //T8,' M = Return to the Main Menu'
7      ///T8,' Select option 1 or 2, then hit the RETURN key'/)

```

```

300 ACCEPT 350,CHOICE
350 FORMAT (A)

```

C Input Error-Trap

```

IF (((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) .AND.
1      ((CHOICE .NE. 'H') .AND. (CHOICE .NE. 'h'))) .AND.
1      ((CHOICE .NE. 'M') .AND. (CHOICE .NE. 'm')))) THEN
type *,'Wrong entry, please hit RETURN and try again'
accept 360,answer
360      format (A)
GO TO 100
END IF

```

```

IF ((CHOICE .EQ. 'H') .OR. (CHOICE .EQ. 'h')) THEN
CALL LIB$ERASE_PAGE (1,1)
CALL LIB$SPAWN ('rephelp')
GO TO 100
ELSE IF (CHOICE .EQ. '2') THEN
GO TO 80000
ELSE IF ((CHOICE .EQ. 'M') .OR. (CHOICE .EQ. 'm')) THEN
RETURN
END IF

```

```

C ***** * * * * * *****
C *

```

```

C This section for standard reports
C Note: To any one attempting to modify the programs;
C
C     Please leave the continuation characters as is on
C     format number 550; they represent the search numbers
C     on the NASA job specification
C
C ***** * * * * * *****

```

```

400 CALL LIB$ERASE_PAGE (1,1)
    CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
    CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
    IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
    OPENPORT = .FALSE.
    END IF

```

```

C Include port2 definition commands

    INCLUDE '[NASA3.JSEXREC]JSPORT25.INC'
    OPENPORT = .TRUE.

```

```

500 TYPE 550
550 FORMAT (T21, ' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports:'
2      //' -----'
e      //' 1 = For one country, find all designations'
e      ' and U.S. equivalents'
b      '/' 2 = For one foreign alloy, find all similar'
b      ' foreign alloys'
i      '/' 3 = Print the whole database'
a      '/' 4 = For one foreign alloy, find all similar'
a      ' U.S. alloys'
f      '/' 5 = For one U.S. alloy, find similar foreign alloys'
f      ' from one country'
g      '/' 6 = For one U.S. alloy, find similar foreign alloys'
g      ' from all countries'
c      '/' 7 = For a Range of foreign alloys, find all similar'
c      ' U.S. alloys'
h      '/' 8 = For a Range of U.S. alloys, find all similar'
h      ' foreign alloys'

K      //' H = Display Help Information'
L      '/' P = Return to the previous Menu'
M      '/' M = Return to the Main Menu'
N      //' Type the number corresponding to your choice,'
O      '/' then hit the RETURN key'/)

```

```

600 ACCEPT 650,CHOICE
650 FORMAT (A)
    IF ((CHOICE .EQ. 'H') .OR. (CHOICE .EQ. 'h')) THEN
        CALL LIB$ERASE_PAGE (1,1)
        CALL LIB$SPAWN('stdrephelp')
        GO TO 400
    ELSE IF (CHOICE .EQ. '1') THEN
        GO TO 10000
    ELSE IF (CHOICE .EQ. '2') THEN
        GO TO 20000
    ELSE IF (CHOICE .EQ. '3') THEN
        GO TO 30000
    ELSE IF (CHOICE .EQ. '4') THEN
        GO TO 40000

```

```

ELSE IF (CHOICE .EQ. '5') THEN
GO TO 50000
ELSE IF (CHOICE .EQ. '6') THEN
GO TO 60000
ELSE IF (CHOICE .EQ. '7') THEN
GO TO 70000
c ELSE IF (CHOICE .EQ. '8') THEN
c GO TO 78000
ELSE IF (CHOICE .EQ. '8') THEN
GO TO 79000
ELSE IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
GO TO 100
ELSE IF ((CHOICE .EQ. 'M') .OR. (CHOICE .EQ. 'm')) THEN
RETURN
ELSE
type *, 'Wrong entry, hit RETURN to try again'
accept 700, answer
format (A)
700 go to 400
END IF

```

```

C ***** * * * * * *****
C
C Standard Reports: Option 1
C For one country, find all designations and U.S. equivalents
C
C Search 1.e
C ***** * * * * * *****

```

```
10000 CALL LIB$ERASE_PAGE (1,1)
```

```
10100 TYPE 10105
```

```

10105 FORMAT (T21, ' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1 // ' Producing Standard Reports: [1]'
2 /' -----'
3 // ' For one country, find all designations'
4 ' and U.S. equivalents'

5 // ' 01=Australia 06=Finland 11=Norway'
6 ' 16=United Kingdom'
7 /' 02=Canada 07=France 12=South Africa'
8 ' 17=U.S.A.'
9 /' 03=China 08=Japan 13=Spain'
A ' 18=U.S.S.R.'
B /' 04=Denmark 09=Mexico 14=Sweden'
C ' 19=West Germany'
D /' 05=East Germany 10=New Zealand 15=Switzerland'
E ' 20=Italy'
F /' 21=Belgium 22=Netherlands 23=Portugal'
F ' 30=ISO'
F // ' Please enter Country code from the table,'
G ' Then hit the RETURN key'
H /' Or, To return to the previous Menu, enter P'
I /' Then hit the RETURN key'//)

```

```
10200 ACCEPT 10205,CNTRY
```

```

10205 FORMAT (A2)
IF ((CNTRY(1:1) .EQ. 'P') .OR. (CNTRY(1:1) .EQ. 'p')) THEN
GO TO 400
END IF

```

```
C Prepare subscript for country literals table
```

```
CALL jsCNTRY (cntry,icntry,Xcntry)
IF (ICNTRY .EQ. 31) THEN
  type *,' '
  type *,'Country Code out of range, hit RETURN to try again'
  type *,'Or type M, then hit RETURN to return to Main Menu'
  accept 10305,answer
10305  format (A)
      IF ((ANSWER .EQ. 'M') .OR. (ANSWER .EQ. 'm')) THEN
        RETURN
      ELSE
        GO TO 10000
      END IF
    END IF
  type *,' '
  type *,'Searching for records, Please stand by'

  CNTRYX = ' '//CNTRY//' '
10310 CALL DTR$COMMAND (DAB, 'FIND !CMD WITH COUNTRY = !CMD;',
1  DOMAIN,CNTRYX)
  CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

C Check for possible datatrieve errors
  IF ((DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1  (DAB$L_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
    GO TO 90100
  END IF

C Investigate the number of records found,
C if no records were found then return to try another Rse

10320 CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')

  IF (DAB$W_STATE .EQ. DTR$K_STL_PGET) THEN
    CALL DTR$GET_PORT (DAB, NUM_RECS)
    CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
  END IF

  IF (NUM_RECS .EQ. 0) THEN
    type *,'No records found from that country'
    type *,'Hit RETURN to try another country'
    accept 10325,answer
10325  format (A)
      GO TO 10000
    END IF

C Program will branch here only if RSE has been successful,
10330 TYPE 10335
10335 FORMAT (/' Select one of the following options: then hit RETURN'
1  /' 1 = Print only standard fields'
2  /' 2 = Print all fields'
3  /' P = Do not print, just return to the previous menu'/)

  ACCEPT 10337,CHOICE
10337 FORMAT (A)
  IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
    CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
    GO TO 10000
  END IF
  IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
    type *,'Wrong entry, hit RETURN to try again'
    accept 10339,answer
10339  format (A)
```



```

      go to 10330
END IF

```

```

10400 CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')

```

C Check for possible datatrieve errors

```

      IF ((DAB$L_CONDITION .NE. %LOC(DTR$ SUCCESS)) .OR.
1      (DAB$L_CONDITION .EQ. %LOC(DTR$ ERROR))) THEN
      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      type *, 'DTR ERROR'
      type *, 'Just hit RTN to continue'
      accept 10405, answer
10405  format (A)
      RETURN
END IF

```

```

      CALL JSSETUP (PRT, CHOICE)

```

```

11000 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
      type *, ' '
      type *, 'The Report has been printed'
      type *, 'Hit the RETURN key to continue'
      accept 11005, answer
11005  format (A)
      CALL LIB$SPAWN ('SET TERM/WIDTH=80')
      GOTO 400
END IF

```

```

11200 CALL DTR$GET_PORT (DAB, %REF(FULLREC))
C Extract the country code from the fortran buffer to be used to
C pull out the country literal from the literal pool
      CNTRY = CONTRY
      CALL jsCNTRY (cntry, icntry, Xcntry)

```

```

C Print the detail line from the record buffer
      IF (CHOICE .EQ. '1') THEN
      CALL JSPRTFEW(prt)
      GOTO 11000
      END IF
      IF (CHOICE .EQ. '2') THEN
      CALL JSPRTALL(PRT, FINISH)
      IF (FINISH) THEN
      call lib$spawn ('set term/width=80')
      GOTO 400
      ELSE
      GOTO 11000
      END IF
      END IF

```

```

C ***** * * * * * *****
C
C Standard Reports: Option 2
C For one foreign alloy, find all similar foreign alloys
C
C This is Search 1.b in the specifications
C
C ***** * * * * * *****

```

```

20000 CALL LIB$ERASE_PAGE (1,1)

```

```

TYPE 20005
20005 FORMAT (T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports: [2]'
2      //' -----'
3      //' For one foreign alloy, find all similar foreign alloys'
4      //' Choose one of the following criteria:'
5      //' 1 = Select by matching U.S. Equivalentents'
6      //' 2 = Select by matching chemical composition'
7      //' P = Return to the previous menu'
8      //' M = Return to the Main Menu'
9      //' H = Display Help Information'
A      //' Type the number corresponding to your choice'
B      //' then hit the RETURN key'//)

```

```

20010 ACCEPT 20015,CHOICE
20015 FORMAT (A)

```

```

IF ((CHOICE .EQ. 'H') .OR. (CHOICE .EQ. 'h')) THEN
  CALL LIB$ERASE_PAGE (1,1)
  CALL LIB$SPAWN ('stdrephelp')
  GO TO 20000
ELSE IF (CHOICE .EQ. '1') THEN
  GO TO 20100
ELSE IF (CHOICE .EQ. '2') THEN
  GO TO 22000
ELSE IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
  GO TO 400
ELSE IF ((CHOICE .EQ. 'M') .OR. (CHOICE .EQ. 'm')) THEN
  RETURN
ELSE
  type *, 'Wrong entry, hit RETURN to try again'
  accept 20017,answer

```

```

20017  format (A)
      go to 20000
      END IF

```

```

C ***** * * * * * *****
C
C Selecting by matching U.S. Equivalentents
C
C This is still Search 1.b in the specifications
C
C The following procedure/logic is used:
C 1. Accept the foreign designation value
C 2. Search the database for all foreign alloys with that designation
C 3. From the above established collection, find the first record
C    with an US Equivalent value.
C    Extract the first US Equivalent value into a fortran field
C    If all of the records within the collection have blank
C    US Equivalent fields, then print a warning message and
C    return to the previous menu
C 4. Release all the records
C 5. Search the whole data base for all foreign alloys that have
C    the same US Equivalent
C 6. Print/display the following information:
C
C
C ***** * * * * * *****

```

20100 CALL LIB\$ERASE_PAGE (1,1)

TYPE 20105

```
20105 FORMAT (T21, ' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports: [2]'
2      //' -----'
3      //' For one foreign alloy, find all similar foreign alloys'
4      //' [Selecting by matching U.S. Equivalents]'

5      //' Please enter the foreign designation number'
6      ' within double quotation marks'
7      //' Then Hit the RETURN Key'//)
```

C Step 1:

20110 ACCEPT 20115,DSGKEY
20115 FORMAT (A)

```
type *,' '
type *,'Searching for records, Please stand by'
type *,' '
type *,'Search start time is shown below'
call lib$spawn ('ti')
type *,' '
```

C Step 2: Establish a collection of all foreign alloys with the
C the given designation

20300 CALL DTR\$COMMAND (DAB, 'PORT2 = !CMD WITH DESIG = !CMD AND
1 COUNTRY NOT = "17";',DOMAIN,DSGKEY)

```
20310 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
type *,'No foreign records found with that designation'
type *,'Hit RETURN to try another designation'
accept 20315,answer
```

```
20315 format (A)
CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
IF (OPENPORT) THEN
CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
OPENPORT = .FALSE.
END IF
RETURN
END IF
```

```
type *,' '
type *,'Search finish time is shown below'
call lib$spawn ('ti')
type *,' '
```

C Step 3:

C Retrieve (GET) 1 record with an US_Equivalent value
C into the Buffer (FULLREC)

20600 CALL DTR\$GET PORT (DAB, %REF(FULLREC))

```
C Test for a non-blank US Equivalent field
IF (EQUIV .EQ. ' ') THEN
IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
type *,'- All selected records have blank US Equiv'
type *,'Hit RETURN to try another designation'
accept 20605,answer
```

```

20605      format (A)
           CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
           IF (OPENPORT) THEN
             CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
             CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
             OPENPORT = .FALSE.
           END IF
           RETURN
         else
           go to 20600
         end if
       END IF

```

C At this point we know that we have a non-blank US_Equivalent
C We shall store the following values for later use

```

Xfadb      = fadb
Xdesig     = desg
Xcountry   = contry
Xequiv     = equiv

```

C Step 4: Release all records from the current collection
C NOTE:
C This next routine extracts all the records from the
C collection to force the DAB\$W_STATE to change from
C DTR\$K_STL_PGET

```

20640 IF (DAB$W STATE .EQ. DTR$K STL PGET) THEN
  CALL DTR$GET_PORT (DAB, %REF(FULLREC))
  go to 20640
else
  CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
  IF (OPENPORT) THEN
    CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
    CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
    OPENPORT = .FALSE.
  END IF
end if

```

C Declare a PORT PORT2 again for Storing all records
INCLUDE '[NASA3.JSEXREC]JSPORT25.INC'
OPENPORT = .TRUE.

C Step 5: Search the whole data base for all foreign alloys that have
C the same US_Equivalent
C The next statement converts the character data Xequiv into
C a literal within double quotes by concatenation
C Datatrieve would not just accept the Xequiv as stored above

```

XEQUIV2 = ''//XEQUIV//''

CALL DTR$COMMAND (DAB, 'find !CMD WITH US_EQV = !CMD and
1 country not = "17";',DOMAIN,Xequiv2)

CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

```

20700 TYPE 20705
20705 FORMAT (/ ' Select one of the following options: then hit RETURN'
1 // ' 1 = Print only standard fields'
2 / ' 2 = Print all fields'
3 // ' P = Do not print, just return to the previous menu'/)

```

ACCEPT 20715,CHOICE
20715 FORMAT (A)

IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
    CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
    CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
    GO TO 20000
END IF
IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
    type *, 'Wrong entry, hit RETURN to try again'
    accept 20725,answer
20725    format (A)
        go to 20700
END IF

20730 CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')
        CALL DTR$DTR (DAB,DTR$M_OPT_CMD)

C Check for possible datatrieve errors

    IF ((DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1      (DAB$L_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
        CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
        type *, 'There was a fatal Datatrieve ERROR'
        type *, 'Hit RETURN to go back to the Main Menu'
        accept 20735,answer
20735    format (A)
        RETURN
    END IF

C Choose between screen display and printed report
C NOTE:
C     We need to do this little routine B4 entering into
C     the record retrieval loop (based on DAB$W_STATE)

21010 TYPE 21015
21015 FORMAT (/' Do you want to display the report on the screen'
1         /' or print it to a temporary file for later use?'
2         /' Please respond with S or F:')

    accept 21025,answer
21025 format (A)
1      IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
        ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
        type *, 'Wrong entry, please hit RETURN and try again'
        accept 21035,answer
21035    format (A)
        GO TO 21010
    END IF

    IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
        WRITE (*,21045)
21045    FORMAT (/' Your report will be stored in a temporary'
1         ' data file e.g. PRTEMP.DAT which'
2         ' you may browse with EDT or print on your'
3         ' local printer i.e. PRINT PRTEMP.DAT'
4         /' Choose and enter a name for your'
5         ' temporary print file, e.g. PRTEMP'/)

```

```

21055      ACCEPT 21055,FILENAME
          FORMAT (A)
          PRT = 3
          OPEN (3,FILE=FILENAME,STATUS='NEW')
ELSE
          PRT = 5
END IF
21060 CONTINUE
      IF ((ANSWER .EQ. 'S') .OR. (ANSWER .EQ. 's')) THEN
          CALL LIB$SPAWN ('SET TERM/WIDTH=132')
      END IF
      IPAGE = 0
      RECPRT = 50

C Step 6: Retrieve (GET) 1 record at a time via PORT2 into
C         the Buffer (FULLREC) and print with fortran

21100 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
      type *,'No foreign alloys match that US Equivalent'
      type *,'Hit RETURN to try another designation'
      accept 21205,answer
21205   format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
      IF (OPENPORT) THEN
          CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
          CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
      OPENPORT = .FALSE.
      END IF
      RETURN
END IF

21300 CALL DTR$GET_PORT (DAB, %REF(FULLREC))
C Extract the country code from the fortran buffer to be used to
C pull out the country literal from the literal pool
      CNTRY = CONTRY
      CALL jsCNTRY (cntry,icntry,Xcntry)

C Step 7: Print from the FORTRAN Buffer FULLREC

      IF (CHOICE .EQ. '2') THEN
          go to 21400
      END IF

C This section for printing the Abbreviated report

      RECPRT = RECPRT+1
      IF (RECPRT .GT. 50) THEN
          RECPRT = 1
          IPAGE = IPAGE+1
          CALL LIB$ERASE PAGE (1,1)
          WRITE (PRT,21305) IPAGE,Xdesig,Xequiv
21305 FORMAT ('1NASA ALLOY DATABASE ABBREVIATED REPORT',
1         '      Page ',I4,
2         '//' List of foreign Alloys similar to foreign alloy'
3         ' with Designation: = ',A30,
4         ' and US Equivalent = ',A30,
5         '//' [Similarity by matching US Equivalentents]'
6         '//' Rec. No. Designation',20X,'US Equivalent',12X,
7         ' Temper',10X,'Country',9X,'Form'//)
      END IF

```

```

WRITE (PRT,21315) FADB,DESG,EQUIV,TEMPR,XCNTRY,FORMNUM
21315 FORMAT (' ',A7,2X,A30,1X,A25,1X,A15,1X,A15,1X,A30)

IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
  type *,' '
  type *,'The report has been printed'
  type *,'Hit RETURN to go back to the Main Menu'
  accept 21325,answer
21325  format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
      IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
      OPENPORT = .FALSE.
      END IF
      CALL LIB$SPAWN ('SET TERM/WIDTH=80')
      return
  END IF
  go to 21300

C This section for full report

21400 CALL LIB$ERASE_PAGE (1,1)

      IPAGE = IPAGE+1
      WRITE (PRT,21405) IPAGE,Xdesig,Xequiv
21405 FORMAT ('1NASA ALLOY DATABASE FULL REPORT',
1         '          Page ',I4,
2         '// List of foreign Alloys similar to foreign alloy'
3         ' with Designation: = ',A30,
4         '/ and US Equivalent = ',A30,
5         '// [Similarity by matching US_Equivalents]'/)

      WRITE (PRT,21415) FADB,DESG,EQUIV,XCNTRY
21415 FORMAT (' Rec#: ',A7,' Designation: ',A30,' US_Equivalent: ',A25,
1         ' Country: ',A15/)

      WRITE (PRT,21425) ALTYP,TEMPR,FORMNUM,ORIGIN
21425 FORMAT (' Type: ',A4,' Temper: ',A15,' Form: ',A30,
1         ' Orig. Org: ',A10/)

      WRITE (PRT,21435)
21435 FORMAT (' COMPOSITION:')

      WRITE (PRT,21445)
21445 FORMAT (' [Wt.%]',6X,'Al',6X,'Si',6X,'Fe',6X,'Cu',6X,'Mn',6X,
1         'Mg',6X,'Zn',6X,'V ',6X,'Ti',6X,'Zr',6X,'Cr',6X,'Ni',6X,
2         'Pb',6X,'Sn')

      WRITE (PRT,21455) MINAL,MINSI,MINFE,MINCU,MINMN,MINMG,MINZN,
1         MINV,MINTI,MINZR,MINCR,MINNI,MINPB,MINSN
21455 FORMAT (8X,'MIN: ',14(A7,1X))

      WRITE (PRT,21465) MAXAL,MAXSI,MAXFE,MAXCU,MAXMN,MAXMG,MAXZN,
1         MAXV,MAXTI,MAXZR,MAXCR,MAXNI,MAXPB,MAXSN
21465 FORMAT (8X,'MAX: ',14(A7,1X)/)

      WRITE (PRT,21475) OTHER1,OTHER2,SPECS1
21475 FORMAT (13X,A10,2X,A10,42X,'Specifications:[1] ',A30)

```

```

WRITE (PRT,21485) MINO1,MINO2,SPECS2
21485 FORMAT (8X,'MIN: ',A7,6X,A7,61X,'[2] ',A30)
WRITE (PRT,21495) MAXO1,MAXO2,SPECS2
21495 FORMAT (8X,'MAX: ',A7,6X,A7,61X,'[3] ',A30)
WRITE (PRT,21505) SPECS4
21505 FORMAT (92X,'[4] ',A30)
WRITE (PRT,21515) SPECS5
21515 FORMAT (92X,'[5] ',A30)
WRITE (PRT,21525) SCCRTG
21525 FORMAT (19X,'MIN MAX TYP UNITS',11X,'SCC Rating: ',A4)
WRITE (PRT,21535) MINYLD,MAXYLD,TYPYLD,YLUNIT
21535 FORMAT (' Yield Strength: ',3(A3,2X),A6)
WRITE (PRT,21545) MINTNS,MAXTNS,TYPTNS,TNUNIT
21545 FORMAT (' Tensile Strength: ',3(A3,2X),A6,10X,'NOTES: ',A60)
IF ((ANSWER.EQ. 'F') .OR. (ANSWER.EQ. 'f')) THEN
  GO TO 21900
END IF

```

```

type *,' '
write (prt,21547)
21547 format (' Hit the RETURN key to continue printing, To stop',
1 ' printing type S, then Hit the RETURN key: ',S)

```

```

accept 21550,answer
21550 format (A)
if ((answer.eq. 'S') .OR. (answer.eq. 's')) then
  call lib$spawn ('set term/width=80')
  return
end if

```

```

21900 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
  type *,'The report has been printed'
  type *,'Hit RETURN to go back to the Main Menu'
  accept 21905,answer

```

```

21905 format (A)
CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
IF (OPENPORT) THEN
  CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
  CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
OPENPORT = .FALSE.
END IF
call lib$spawn ('set term/width=80')
return

```

```
END IF
```

```
go to 21300
```

```

C ***** * * * * * *****
C
C Selecting by matching chemical composition
C
C This is still Search 1.b in the specifications
C
C The following procedure/logic will be used:
C
C 1. Accept the record number whose composition is to be matched
C 2. Establish a one record collection and
C 3. Retrieve (GET) that 1 record via PORT2 into the Buffer (FULLREC)
C 4. Release the current collection
C 5. Redeclare PORT2
C 6. Use the composition data of the record in the buffer

```



```

C   to establish another collection
C 7. Retrieve (GET) 1 record at a time from the new collection via
C   PORT2 into the Buffer (FULLREC) and
C 8. Print the information from the FORTRAN Buffer FULLREC
C                                     *
C *****

```

```

22000 CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
      IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
      OPENPORT = .FALSE.
      END IF
      CALL DTR$COMMAND (DAB,'SHOW ALL')
      CALL DTR$DTR (DAB,DTR$M_OPT_CMD)

```

```

C   Include file of commands to declare port2

```

```

      INCLUDE '[NASA3.JSEXREC]JSPORT25.INC'
      OPENPORT = .TRUE.

```

```

22002 CALL LIB$ERASE_PAGE (1,1)

```

```

      TYPE 22005
22005 FORMAT (/T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1          //' Producing Standard Reports: [2]'
2          //' -----'
3          //' For one foreign alloy, find all similar foreign alloys'
4          //' [Selecting by matching chemical composition]'
5          //' Enter the record number whose chemical composition',
6          //' is to be matched'
7          //' Or, To return to the Main Menu, enter M'
8          //' Then hit the RETURN key'//)

```

```

C Step 1:

```

```

22040 ACCEPT 22045,RECKEY
22045 FORMAT (A)

```

```

      IF ((RECKEY .EQ. 'M') .OR. (RECKEY .EQ. 'm')) THEN
        RETURN
      END IF

```

```

      reckeyx = ''//reckey//''

```

```

        type *,' '

```

```

        type *,'Searching for the foreign record, Please stand by'

```

```

        type *,' '

```

```

C Step 2: Search the database for that foreign record

```

```

      CALL DTR$PRINT_DAB(DAB)
22100 CALL DTR$COMMAND (DAB, 'PORT2 = !CMD WITH FADB_NO = !CMD',
1DOMAIN,RECKEYX)

```

```

        type *,' '

```

```

        type *,'DAB Dump after 22100; search for foreign record'

```

```

        type *,' '

```

```

      CALL DTR$PRINT_DAB (DAB)

```

```

        type *,'-'

```

C Step 3:

C Retrieve (GET) that 1 record from PORT2 into the Buffer (FULLREC)

```
22200 IF (DAB$W STATE .NE. DTR$K STL PGET) THEN
      type *, 'That foreign record was not found'
      type *, 'Hit RETURN to try another record'
      accept 22205, answer
```

```
22205 format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      OPENPORT = .FALSE.
      END IF
      GO TO 22000
END IF
```

```
22300 CALL DTR$GET_PORT (DAB, %REF(FULLREC))
```

C Save the fadb, designation, country_of_origin, and U.S. Equivalent
C for the heading

```
Xfadb      = fadb
Xdesig     = desg
Xcountry   = contry
Xequiv     = equiv
XcountryX  = ' '//Xcountry//' '
XEQUIV2    = ' '//XEQUIV//' '

```

C The following print statement is only a checkpoint

```
write (5,22301) fadb,desg,XcountryX,minal,maxal,minsi,maxsi,
1      minfe,maxfe,mincu,maxcu,minmn,maxmn,minmg,maxmg,scrtg,
2      tempr,xequiv2,units,minyld,mintns,refl
```

```
22301 format (/' The following are checkpoint values',
1          /' Fadb = ',A7,' Desig = ',A30,' Country code = ',A4,
2          /' Min_Al = ',A7,' Max_Al = ',A7,' Min_Si = ',A7,
3          /' Max_Si = ',A7,
2          /' Min_Fe = ',A7,' Max_Fe = ',A7,' Min_Cu = ',A7,
3          /' Max_Cu = ',A7,
2          /' Min_Mn = ',A7,' Max_Mn = ',A7,' Min_Mg = ',A7,
3          /' Max_Mg = ',A7,
7          /' SCC Rating = ',A4,' Temper = ',A15,' Equiv = ',A27,
8          /' Units = ',A,' Min Yld = ',A3,' Min_Tns = ',A3,
9          /' Reference #1 = ',A3,
4          /' Just hit RETURN to continue')
```

```
      accept 22302,dummy
22302 format (A)
```

C Step 4:

C Release all records from the current collection

```
CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
```

OPENPORT = .FALSE.
END IF

C Include file for commands declaring port2

INCLUDE '[NASA3.JSEXREC]JSPORT25.INC'
OPENPORT = .TRUE.

type *,' '
type *,'DAB Dump after declare PORT2 B4 composition search'
type *,' '
CALL DTR\$PRINT_DAB (DAB)
type *,' '

C Step 5:

C Use the composition data of the record in the buffer
C to search the database and find all U.S. alloys
C with the same composition

type *,' '
type *,'Searching for records with equal composition - Stand by'

22323 CALL DTR\$COMMAND (DAB, 'FIND !CMD WITH MIN-AL = !cmd AND
1 MAX-AL = !cmd AND MIN-SI = !cmd AND MAX-SI = !cmd
2 AND MIN-FE = !CMD AND MAX-FE = !CMD ',
3 DOMAIN,MINAL,MAXAL,MINSI,MAXSI,MINFE,MAXFE)
C 3 AND MIN-FE = !cmd AND MAX-FE = !cmd
C 4 AND MIN-CU = !cmd AND MAX-CU = !cmd
C 4 AND MIN-MN = !cmd AND MAX-MN = !cmd
C 5 AND MIN-MG = !cmd AND MAX-MG = !cmd
C 6 AND MIN-ZN = !cmd AND MAX-ZN = !cmd
C 7 AND MIN-VD = !cmd AND MAX-VD = !cmd
C 8 AND MIN-TI = !cmd AND MAX-TI = !cmd
C 9 AND MIN-ZR = !cmd AND MAX-ZR = !cmd
C A AND MIN-CR = !cmd AND MAX-CR = !cmd
C B AND MIN-NI = !cmd AND MAX-NI = !cmd
C C AND MIN-PB = !cmd AND MAX-PB = !cmd
C D AND MIN-SN = !cmd AND MAX-SN = !cmd;', DOMAIN,
C e MINAL,MAXAL,MINSI,MAXSI,MINFE,MAXFE,
C f MINCU,MAXCU,MINMN,MAXMN,MINMG,MAXMG,
C g MINZN,MAXZN,MINV,MAXV,MINTI,MAXTI,
C h MINZR,MAXZR,MINCR,MAXCR,MINNI,MAXNI,
C i MINPB,MAXPB,MINSN,MAXSN)
C

CALL DTR\$DTR (DAB, DTR\$M_OPT_CMD)

type *,' '
type *,'DAB Dump after the search for equal composition'
type *,' '
type *,' '

C Investigate the number of records found,
C if no records were found then return to try another Rse

CALL DTR\$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')

IF (DAB\$W_STATE .EQ. DTR\$K_STL_PGET) THEN

```
CALL DTR$GET PORT (DAB, NUM RECS)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
END IF

IF (NUM RECS .EQ. 0) THEN
  type *, 'No records found with the same composition'
  type *, 'Hit RETURN to select another record'
  accept 22325, answer
22325  format (A)
      GO TO 22000
END IF

CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')
type *, ' '
type *, 'DAB Dump after PORT2 = CURRENT'
type *, ' '
CALL DTR$PRINT_DAB (DAB)
type *, ' '
22330 TYPE 22335
22335 FORMAT (/' Select one of the following options: then hit RETURN'
1      /' 1 = Print only standard fields'
2      /' 2 = Print all fields'
3      /' M = Do not print, just return to the Main Menu'/)

ACCEPT 22345, CHOICE
22345 FORMAT (A)
IF ((CHOICE .EQ. 'M') .OR. (CHOICE .EQ. 'm')) THEN
  CALL DTR$COMMAND (DAB, 'finish ALL;')
  call lib$spawn ('set term/width=80')
  return
END IF
IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
  type *, 'Wrong entry, hit RETURN to try again'
  accept 22355, answer
22355  format (A)
      go to 22330
END IF

C Choose between screen display and printed report

22360 TYPE 22365
22365 FORMAT (/' Do you want to display the report on the screen'
1      /' or print it to a temporary file for later use?'
2      /' Please respond with S or F:'/)
  accept 22375, answer
22375 format (A)
C Input Error-Trap
1      IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
        ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
  type *, 'Wrong entry, please hit RETURN and try again'
  accept 22385, answer
22385  format (A)
      GO TO 22360
END IF
IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
  WRITE (*, 22395)
22395  FORMAT (/' Your report will be stored in a temporary'
1      ' data file e.g. PRTEMP.DAT which'
2      /' you may browse with EDT or print on your'
3      ' local printer i.e. PRINT PRTEMP.DAT'
4      /' Choose and enter a name for your'
5      ' temporary print file, e.g. PRTEMP'/)
```

```

ACCEPT 22405,FILENAME
22405  FORMAT (A)
      PRT = 3
      OPEN (3,FILE=FILENAME,STATUS='NEW')
ELSE
      PRT = 5
END IF

C Step 6:
C Retrieve (GET) 1 record at a time from PORT2 into
C the Buffer (FULLREC), and print from the buffer

22500 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
      type *,'The record has been printed'
      type *,'Hit the RETURN key to continue'
      accept 22505,answer
22505  format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      IF (OPENPORT) THEN
          CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
          CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
          OPENPORT = .FALSE.
      END IF
      go to 22000
END IF
22600 CALL DTR$GET_PORT (DAB, %REF(FULLREC))
C Print the detail line from the fortran buffer
      IF (CHOICE .EQ. '2') THEN
          go to 22800
      END IF

C This section for printing the Abbreviated report
      RECPRT = RECPRT+1
      IF (RECPRT .GT. 50) THEN
          RECPRT = 1
          IPAGE = IPAGE+1
          CALL LIB$ERASE PAGE (1,1)
          WRITE (PRT,22605) IPAGE,Xfadb,Xdesig,Xcntry,Xequiv
22605  FORMAT ('1NASA ALLOY DATABASE ABBREVIATED REPORT',
1         '      Page ',I4,
2         '// List of foreign Alloys with exactly the same',
3         ' composition as the foreign alloy'
3         ' of record number = ',A7,' designation = ',A30,
4         ' from country = ',A15,' and of U.S. Equivalent = ',A25,
6         '// Rec. No. Designation',20X,'US Equivalent',12X,
7         ' Temper',10X,'Country',9X,'Form'/)
      END IF
      WRITE (PRT,22715) FADB,DESG,EQUIV,TEMPR,XCNTRY,FORMNUM
22715  FORMAT (' ',A7,2X,A30,1X,A25,1X,A15,1X,A15,1X,A30)

      GO TO 22500

C This section for full report
22800 CALL LIB$ERASE PAGE (1,1)
      IPAGE = IPAGE+1
      WRITE (PRT,22605) IPAGE,Xfadb,Xdesig,Xcntry,Xequiv
22805  FORMAT ('1NASA ALLOY DATABASE FULL REPORT',
1         '      Page ',I4,
2         '// List of foreign Alloys with exactly the same',
3         ' composition as the foreign alloy'
3         ' of record number = ',A7,' designation = ',A30,
4         ' from country = ',A15,' and of U.S. Equivalent = ',A25/)

```

```

WRITE (PRT,22815) FADB,DESG,EQUIV,XCNTY
22815 FORMAT (' Rec#: ',A7,' Designation: ',A30,' US_Equivalent: ',A25,
1          'Country: ',A15/)

WRITE (PRT,22825) ALTYP,TEMPR,FORMNUM,ORIGIN
22825 FORMAT (' Type: ',A4,' Temper: ',A15,' Form: ',A30,
1          ' Orig. Org: ',A10/)

WRITE (PRT,22835)
22835 FORMAT (' COMPOSITION:')

WRITE (PRT,22845)
22845 FORMAT (' [Wt.%]',6X,'Al',6X,'Si',6X,'Fe',6X,'Cu',6X,'Mn',6X,
1          'Mg',6X,'Zn',6X,'V ',6X,'Ti',6X,'Zr',6X,'Cr',6X,'Ni',6X,
2          'Pb',6X,'Sn')
WRITE (PRT,22855) MINAL,MINSI,MINFE,MINCU,MINMN,MINMG,MINZN,
1          MINV,MINTI,MINZR,MINCR,MINNI,MINPB,MINSN
22855 FORMAT (8X,'MIN: ',14(A7,1X))
WRITE (PRT,22865) MAXAL,MAXSI,MAXFE,MAXCU,MAXMN,MAXMG,MAXZN,
1          MAXV,MAXTI,MAXZR,MAXCR,MAXNI,MAXPB,MAXSN
22865 FORMAT (8X,'MAX: ',14(A7,1X)/)
WRITE (PRT,22875) OTHER1,OTHER2,SPECS1
22875 FORMAT (13X,A10,2X,A10,42X,'Specifications:[1] ',A30)
WRITE (PRT,22885) MINO1,MINO2,SPECS2
22885 FORMAT (8X,'MIN: ',A7,6X,A7,61X,'[2] ',A30)
WRITE (PRT,22895) MAXO1,MAXO2,SPECS2
22895 FORMAT (8X,'MAX: ',A8,6X,A8,61X,'[3] ',A30)
WRITE (PRT,22905) SPECS4
22905 FORMAT (92X,'[4] ',A30)
WRITE (PRT,22915) SPECS5
22915 FORMAT (92X,'[5] ',A30)
WRITE (PRT,22925) SCCRTG
22925 FORMAT (19X,'MIN MAX TYP UNITS',11X,'SCC Rating: ',A4)
WRITE (PRT,22935) MINYLD,MAXYLD,TYPYLD,YLUNIT
22935 FORMAT (' Yield Strength: ',3(A3,2X),A6)
WRITE (PRT,22945) MINTNS,MAXTNS,TYPTNS,TNUNIT
22945 FORMAT (' Tensile Strength: ',3(A3,2X),A6,10X,'NOTES: ',A60)
IF ((ANSWER.EQ. 'F') .OR. (ANSWER.EQ. 'f')) THEN
GO TO 22970
END IF
type *,' '
write (prt,22955)
22955 format (' Hit the RETURN key to continue printing, To stop',
1          ' printing type S, then Hit the RETURN key: ',A)
accept 22965,answer
22965 format (A)

if ((answer.eq. 'S') .OR. (answer.eq. 's')) then
call lib$spawn ('set term/width=80')
return
end if
22970 IF (DAB$W STATE .NE. DTR$K STL PGET) THEN
type *,'The report has been printed'
type *,'Hit RETURN to go back to the Main Menu'
accept 22975,answer
22975 format (A)
CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
IF (OPENPORT) THEN
CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
OPENPORT = .FALSE.
END IF

```

```

        call lib$spawn ('set term/width=80')
        return
    END IF
    GO TO 22500

```

```

C ***** * * * * * *****
C
C Option 3
C Print the whole database
C
C ***** * * * * * *****

```

```

30000 Continue          !UNITY = 'Wt %'

```

C Step 1:

C PORT2 is declared in SBREPORT to hold any DTR collection

```

30100 CALL DTR$COMMAND (DAB, 'PORT2 = !CMD WITH
      1 DESIG NOT = "XXXXX";',DOMAIN)

```

C Check for possible datatrieve errors

```

      IF ((DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1      (DAB$L_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      type *, 'DTR ERROR'
      type *, 'Just hit RTN to continue'
      accept 30205,answer
30205  format (A)
      RETURN
    END IF

```

C Step 2:

C The above command causes the DTR\$K_STL_PGET stall point
 C While at this DTR stall point, we will continue to use
 C DTR\$GET_PORT to copy one record at a time from the port
 C into our Fortran record buffer FULLREC

```

      CALL JSSETUP (PRT,2)      !Set up to print all fields

```

C IF NEXT CONDITION IS TRUE THEN RESET DOMAIN B4 RETURN

```

30300 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
      type *, ' '
      type *, '- no more records to print'
      type *, 'Just hit RTN to continue'
      accept 30405,answer
30405  format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      IF (OPENPORT) THEN
          CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
          CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
          OPENPORT = .FALSE.
      END IF
      RETURN
    END IF

```

```

30500 CALL DTR$GET_PORT (DAB, %REF(FULLREC))
      CNTRY = CONTRY
      CALL jsCNTRY (cntry,icntry,Xcntry)

```

C Print initial heading

```

c32100 WRITE (PRT,32105)
c32105 FORMAT (T20,' NASA ALLOY DATABASE FULL REPORT'
c      1      /T20,' -----'
c      2      //T21,' Listing of the Whole Database'
c      2      /T21,' -----')

```

```

CALL JSPRTALL (PRT,FINISH)
IF (FINISH) THEN
  CALL LIB$SPAWN ('SET TERM/WIDTH=80')
  GOTO 400
ELSE
  GOTO 30300
END IF

```

C ***** END OF PRINT ALL RECORDS *****

```

C ***** * * * * * *****
C
C Option 4
C For one foreign alloy, find all similar U.S. alloys
C
C This is Search 1a in the specifications
C
C ***** * * * * * *****

```

```

40000 CALL LIB$ERASE_PAGE (1,1)
40002 TYPE 40005
40005 FORMAT (/T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports:'
2      //' -----'
3      //' For one foreign alloy, find all similar U.S. alloys'
4      //' Select one of the following:'
5      //' 1 = Selecting by predetermined U.S. Equivalents'
6      //' 2 = Select by matching chemical composition'
7      //' P = Return to the previous menu'
8      //' M = Return to the Main Menu'
9      //' H = Display Help Information'
A      //' Type the number corresponding to your choice'
B      //' then hit the RETURN key'//)

```

```

40010 ACCEPT 40015,CHOICE
40015 FORMAT (A)

```

```

IF ((CHOICE .EQ. 'H') .OR. (CHOICE .EQ. 'h')) THEN
  CALL LIB$ERASE_PAGE (1,1)
  CALL LIB$SPAWN ('stdrephelp')
  GO TO 40000
ELSE IF (CHOICE .EQ. '1') THEN
  GO TO 40100
ELSE IF (CHOICE .EQ. '2') THEN
  GO TO 42000
ELSE IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
  GO TO 400
ELSE IF ((CHOICE .EQ. 'M') .OR. (CHOICE .EQ. 'm')) THEN
  RETURN
ELSE
  type *,'Wrong entry, hit RETURN to try again'
  accept 40017,answer
40017  format (A)
      go to 40000
END IF

```



```

C ***** * * * * * *****
C
C This is still Search 1a in the specifications
C
C Listing predetermined US Equivalents,
C The following logic shall be used:
C 1. Accept the foreign designation value
C 2. Search the database for any (and all) non-U.S. records
C    with that designation
C 3. Print/display the records
C
C ***** * * * * * *****

```

```

40100 CALL LIB$ERASE_PAGE (1,1)
40102 TYPE 40105
40105 FORMAT (/T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports: [4]'
2      //' -----'
3      //' For one foreign alloy, find all similar U.S. alloys'
4      //' [Selecting predetermined U.S. Equivalents]'
5      //' Enter Alloy Designation within double quotation marks'
6      //' Then hit the RETURN key'/)

```

```

C Step 1:
40110 ACCEPT 40115,DSGKEY
40115 FORMAT (A)
      type *,' '
      type *,'Searching for records, Please stand by'

```

```

C Include file for declaring PORT2
  INCLUDE '[NASA3.JSEXREC]JSPORT25.INC'
  OPENPORT = .TRUE.
c Search for foreign alloys with that designation
40120 CALL DTR$COMMAND (DAB, 'PORT2 = !CMD WITH DESIG = !CMD AND
1 COUNTRY NOT = "17";', DOMAIN,DSGKEY)

```

```

C Check for possible datatrieve errors
  IF ((DAB$!_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1    (DAB$!_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
  CALL DTR$DTR (DAB, DTR$_OPT_CMD)
  type *,'DTR ERROR'
  type *,'Just hit RTN to continue'
  accept 40125,answer
40125 format (A)
  RETURN
  END IF

```

```

C Choose type of report
40200 TYPE 40205
40205 FORMAT (/ Select one of the following options: then hit RETURN'
1      //' 1 = Print only standard fields'
2      //' 2 = Print all fields'
3      //' P = Do not print, just return to the previous menu'/)

```

```

  ACCEPT 40215,CHOICE
40215 FORMAT (A)

  IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
    CALL DTR$COMMAND (DAB, 'RELEASE ALL;')

```

```

IF (OPENPORT) THEN
  CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
  CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
  OPENPORT = .FALSE.
END IF
  GO TO 40000
END IF
IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
  type *,'Wrong entry, hit RETURN to try again'
  accept 40225,answer
40225  format (A)
      go to 40200
END IF

C Choose between screen display and printed report
40300 TYPE 40305
40305 FORMAT (/' Do you want to display the report on the screen'
1      /' or print it to a temporary file for later use?'
2      //' Please respond with S or F: '/')

      accept 40315,answer
40315  format (A)

C Input Error-Trap

      IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
1      ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
      type *,'Wrong entry, please hit RETURN and try again'
      accept 40325,answer
40325  format (A)
      GO TO 40300
      END IF

      IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
40335  WRITE (*,40335)
      FORMAT (/' Your report will be stored in a temporary'
1      ' data file e.g. PRTEMP.DAT which'
2      ' you may brouse with EDT or print on your'
3      ' local printer i.e. PRINT PRTEMP.DAT'
4      //' Choose and enter a name for your'
5      ' temporary print file, e.g. PRTEMP//)

      ACCEPT 40345,FILENAME
40345  FORMAT (A)
      PRT = 3
      OPEN (3,FILE=FILENAME,STATUS='NEW')
      ELSE
      PRT = 5
      END IF

40400 CALL LIB$ERASE_PAGE (1,1)
      IF ((ANSWER .EQ. 'S') .OR. (ANSWER .EQ. 's')) THEN
      CALL LIB$SPAWN ('SET TERM/WIDTH=132')
      END IF
      IPAGE = 0
      RECPRT = 50

40500 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
      type *,'
      type *,'no records found - Just hit RTN to try again'
      accept 40505,answer
40505  format (A)

```

```

CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
IF (OPENPORT) THEN
  CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
  CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
OPENPORT = .FALSE.
END IF
go to 40000
END IF

40510 CALL DTR$GET_PORT (DAB, %REF(FULLREC))
C Step 7: Print from the FORTRAN Buffer FULLREC
IF (CHOICE .EQ. '2') THEN
  go to 40700
END IF
C This section for printing the Abbreviated report
RECPRT = RECPRT+1
IF (RECPRT .GT. 50) THEN
  RECPRT = 1
  IPAGE = IPAGE+1
  CALL LIB$ERASE PAGE (1,1)
  WRITE (PRT,40605) IPAGE,desq
40605  FORMAT ('INASA ALLOY DATABASE ABBREVIATED REPORT',
1      ' Page ',I4,
2      //' Foreign Alloys with Designation: = ',A30,
3      '/' Listed with their corresponding pre-determined'
4      ' US Equivalents'
5      //' Rec. No. Designation',20X,'US Equivalent',12X,
6      ' Temper',10X,'Country',9X,'Form'/)
END IF

WRITE (PRT,40615) FADB,DESG,EQUIV,TEMPR,XCNTRY,FORMNUM
40615  FORMAT (' ',A7,2X,A30,1X,A25,1X,A15,1X,A15,1X,A30)
IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
  type *,' '
  type *,'The report has been printed'
  type *,'Hit RETURN to go back to the Main Menu'
  accept 40625,answer
40625  format (A)
  CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
  IF (OPENPORT) THEN
    CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
    CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
    OPENPORT = .FALSE.
  END IF
  CALL LIB$SPAWN ('SET TERM/WIDTH=80')
  return
END IF

go to 40510

C This section for full report
40700 CALL LIB$ERASE_PAGE (1,1)
IPAGE = IPAGE+1
WRITE (PRT,40705) IPAGE,desq
40705  FORMAT ('INASA ALLOY DATABASE ABBREVIATED REPORT',
1      ' Page ',I4,
2      //' Foreign Alloys with Designation: = ',A30,
3      '/' Listed with their corresponding pre-determined'
4      ' US Equivalents'
5      //' Rec. No. Designation',20X,'US Equivalent',12X,
6      ' Temper',10X,'Country',9X,'Form'/)

```

```

WRITE (PRT,40715) FADB,DESG,EQUIV,XCNTRY
40715 FORMAT (' Rec#: ',A7,' Designation: ',A30,' US_Equivalent: ',A25,
1      'Country: ',A15/)
WRITE (PRT,40725) ALTYP,TEMPR,FORMNUM,ORIGIN
40725 FORMAT (' Type: ',A4,' Temper: ',A15,' Form: ',A30,
1      ' Orig. Org: ',A10/)
WRITE (PRT,40735)
40735 FORMAT (' COMPOSITION:')
WRITE (PRT,40745)
40745 FORMAT (' [Wt.%]',6X,'Al',6X,'Si',6X,'Fe',6X,'Cu',6X,'Mn',6X,
1      'Mg',6X,'Zn',6X,'V ',6X,'Ti',6X,'Zr',6X,'Cr',6X,'Ni',6X,
2      'Pb',6X,'Sn')
WRITE (PRT,40755) MINAL,MINSI,MINFE,MINCU,MINMN,MINMG,MINZN,
1      MINV,MINTI,MINZR,MINCR,MINNI,MINPB,MINSN
40755 FORMAT (8X,'MIN: ',14(A7,1X))
WRITE (PRT,40765) MAXAL,MAXSI,MAXFE,MAXCU,MAXMN,MAXMG,MAXZN,
1      MAXV,MAXTI,MAXZR,MAXCR,MAXNI,MAXPB,MAXSN
40765 FORMAT (8X,'MAX: ',14(A7,1X)/)
WRITE (PRT,40775) OTHER1,OTHER2,SPECS1
40775 FORMAT (13X,A10,2X,A10,42X,'Specifications:[1] ',A30)
WRITE (PRT,40785) MINO1,MINO2,SPECS2
40785 FORMAT (8X,'MIN: ',A7,6X,A7,61X,'[2] ',A30)
WRITE (PRT,40795) MAXO1,MAXO2,SPECS2
40795 FORMAT (8X,'MAX: ',A7,6X,A7,61X,'[3] ',A30)
WRITE (PRT,40805) SPECS4
40805 FORMAT (92X,'[4] ',A30)
WRITE (PRT,40815) SPECS5
40815 FORMAT (92X,'[5] ',A30)
WRITE (PRT,40825) SCCRTG
40825 FORMAT (19X,'MIN MAX TYP UNITS',11X,'SCC Rating: ',A4)
WRITE (PRT,40835) MINYLD,MAXYLD,TYPYLD,YLUNIT
40835 FORMAT (' Yield Strength: ',3(A3,2X),A6)
WRITE (PRT,40845) MINTNS,MAXTNS,TYPTNS,TNUNIT
40845 FORMAT (' Tensile Strength: ',3(A3,2X),A6,10X,'NOTES: ',A60)
IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
GO TO 40900
END IF

type *,' '
write (prt,40855)
40855 format (' Hit the RETURN key to continue printing, To stop',
1      ' printing type S, then Hit the RETURN key: ',S)
accept 40865,answer
40865 format (A)
if ((answer .eq. 'S') .OR. (answer .eq. 's')) then
call lib$spawn ('set term/width=80')
return
end if

40900 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
type *,'The report has been printed'
type *,'Hit RETURN to go back to the Main Menu'
accept 40905,answer
40905 format (A)
CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
IF (OPENPORT) THEN
CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
OPENPORT = .FALSE.
END IF
call lib$spawn ('set term/width=80')
return

```

END IF
go to 40510

C ***** * * * * *

C This is still Search 1a in the specifications

C Selecting by matching chemical composition,
C The following logic shall be used:

- C 1. Accept the record number of the foreign alloy
- C 2. Search the database for that foreign record
C and store this record in a fortran buffer
- C 3. Release all collections
- C 4. Search the whole database to find all U.S. alloys with
C exactly the same composition as that foreign alloy
C which is sitting in the fortran buffer

42000 CALL LIB\$ERASE_PAGE (1,1)

```
CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
IF (OPENPORT) THEN
  CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
  CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
OPENPORT = .FALSE.
END IF
```

C Include file for declaring PORT2
INCLUDE '[NASA3.JSEXREC]JSPORT25.INC'
OPENPORT = .TRUE.
TYPE 42005

```
42005 FORMAT (/T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports: [4]'
2      //' -----'
3      //' For one foreign alloy, find all similar U.S. alloys'
4      //' [Selecting by matching chemical composition]'
5      //' Enter the record number whose chemical composition',
6      //' is to be matched'
7      //' Or, To return to the Main Menu, enter M'
8      //' Then hit the RETURN key'//)
```

C Step 1:

```
ACCEPT 42015,RECKEY
42015 FORMAT (A)
IF ((RECKEY .EQ. 'M') .OR. (RECKEY .EQ. 'm')) THEN
  RETURN
END IF
```

```
type *,' '
type *,'Searching for the record, Please stand by'
```

C Step 2: Search the database for that foreign record

```
42025 CALL DTR$COMMAND (DAB, 'PORT2 = !CMD WITH FADE_NO = !CMD AND
1 COUNTRY NOT = "17";',DOMAIN,RECKEY)
```

```
c      type *,' '
c      type *,'DAB Dump after searching for the foreign recrd'
c      type *,' '
c      CALL DTR$PRINT_DAB (DAB)
c      type *,' '
```

C Check for possible datatrieve errors

```

      IF ((DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1     (DAB$L_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      type *, 'Fatal Datatrieve ERROR'
      type *, 'Hit RETURN to restart'
      accept 42035, answer
42035  format (A)
      RETURN
      END IF

```

C Step 3:

C Retrieve (GET) that 1 record from PORT2 into the Buffer (FULLREC)

```

42100 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
      type *, 'That foreign record was not found'
      type *, 'Hit RETURN to try another record'
      accept 42105, answer
42105  format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      IF (OPENPORT) THEN
          CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
          CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
          OPENPORT = .FALSE.
      END IF
      GO TO 42000
      END IF

```

42200 CALL DTR\$GET_PORT (DAB, %REF(FULLREC))

C Save the fadb, designation, country_of_origin, and U.S._Equivalent

C for the heading

```

      Xfadb = fadb
      Xdesig = desg
      Xcountry = contry
      Xequiv = equiv

```

C Convert the character composition data into

C literal data within double quotes by concatenation

```

      minalx = ''//minal//''
      maxalx = ''//maxal//''
      minsix = ''//minsi//''
      maxsix = ''//maxsi//''
      minfex = ''//minfe//''
      maxfex = ''//maxfe//''
      mincux = ''//mincu//''
      maxcux = ''//maxcu//''
      minmnx = ''//minmn//''
      maxmnx = ''//maxmn//''
      minmgx = ''//minmg//''
      maxmgx = ''//maxmg//''
      minzrx = ''//minzr//''
      maxzrx = ''//maxzr//''
      MINVx = ''//MINV//''
      MAXVx = ''//MAXV//''
      mintix = ''//minti//''
      maxtix = ''//maxti//''
      minzrx = ''//minzr//''
      maxzrx = ''//maxzr//''

```

```

mincrx = ' '//mincr//'
maxcrx = ' '//maxcr//'
minnix = ' '//minni//'
maxnix = ' '//maxni//'
minpbx = ' '//minpb//'
maxpbx = ' '//maxpb//'
minsnx = ' '//minsn//'
maxsnx = ' '//maxsn//'

```

C Step 4:

C Release the current collection

C Note: Only one record was selected earlier and retrieved

```

CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
IF (OPENPORT) THEN
  CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
  CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
OPENPORT = .FALSE.
END IF

```

C Include file for declaring PORT2

```

INCLUDE '[NASA3.JSEXREC]JSPORT25.INC'
OPENPORT = .TRUE.

```

C Step 5:

C Use the composition data of the record in the buffer

C to search the database and find all U.S. alloys

C with the same composition

```

type *,' '
type *,'Searching for U.S. records with equal composition'
42210 CALL DTR$COMMAND (DAB, 'FIND !CMD WITH COUNTRY NOT = "17"
1      AND MIN-AL = !cmd AND MAX-AL = !cmd
2      AND MIN-SI = !cmd AND MAX-SI = !cmd
3      AND MIN-FE = !cmd AND MAX-FE = !cmd
4      AND MIN-CU = !cmd AND MAX-CU = !cmd
5      AND MIN-MN = !cmd AND MAX-MN = !cmd
6      AND MIN-MG = !cmd AND MAX-MG = !cmd
7      AND MIN-ZN = !cmd AND MAX-ZN = !cmd
8      AND MIN-V = !cmd AND MAX-V = !cmd
9      AND MIN-TI = !cmd AND MAX-TI = !cmd
A      AND MIN-ZR = !cmd AND MAX-ZR = !cmd
B      AND MIN-CR = !cmd AND MAX-CR = !cmd
C      AND MIN-NI = !cmd AND MAX-NI = !cmd
D      AND MIN-PB = !cmd AND MAX-PB = !cmd
E      AND MIN-SN = !cmd AND MAX-SN = !cmd;', DOMAIN,
f      MINALX,MAXALX,MINSIX,MAXSIX,MINFEX,MAXFEX,
g      MINCUX,MAXCUX,MINMNX,MAXMNX,MINMGX,MAXMGX,
h      MINZNX,MAXZNX,MINVX,MAXV,MINTIX,MAXTIX,
i      MINZRX,MAXZRX,MINCRX,MAXCRX,MINNIX,MAXNIX,
j      MINPBX,MAXPBX,MINSNX,MAXSNX)

```

```

type *,' '
type *,'DAB Dump after the search for equal composition'
type *,' '
CALL DTR$PRINT_DAB (DAB)
type *,' '

```

C Investigate the number of records found,

C if no records were found then return to try another Rse

```

CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')

```

```

IF (DAB$W_STATE .EQ. DTR$K_STL_PGET) THEN
  CALL DTR$GET_PORT (DAB, NUM_RECS)
  CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
END IF
IF (NUM_RECS .EQ. 0) THEN
  type *, 'No records found with the same composition'
  type *, 'Hit RETURN to select another record'
  accept 42225, answer
42225  format (A)
      GO TO 42000
END IF
CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')
type *, ' '
type *, 'DAB Dump after record was found, and PORT2 = CURRENT'
type *, ' '
CALL DTR$PRINT_DAB (DAB)
type *, ' '

42230 TYPE 42235
42235 FORMAT (/' Select one of the following options: then hit RETURN'
1      /' 1 = Print only standard fields'
2      /' 2 = Print all fields'
3      /' M = Do not print, just return to the Main Menu'/)

ACCEPT 42245, CHOICE
42245 FORMAT (A)
IF ((CHOICE .EQ. 'M') .OR. (CHOICE .EQ. 'm')) THEN
  CALL DTR$COMMAND (DAB, 'finish ALL;')
  call lib$spawn ('set term/width=80')
  return
END IF
IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
  type *, 'Wrong entry, hit RETURN to try again'
  accept 42247, answer
42247  format (A)
      go to 42230
END IF

C Choose between screen display and printed report
42250 TYPE 42255
42255 FORMAT (/' Do you want to display the report on the screen'
1      /' or print it to a temporary file for later use?'
2      /' Please respond with S or F: '/')

accept 42257, answer
42257 format (A)
C Input Error-Trap

1      IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
        ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
  type *, 'Wrong entry, please hit RETURN and try again'
  accept 42265, answer
42265  format (A)
      GO TO 42250
END IF

IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
42275  WRITE (*, 42275)
  FORMAT (/' Your report will be stored in a temporary'
1      ' data file e.g. PRTEMP.DAT which'
2      '/ you may browse with EDT or print on your'
3      ' local printer i.e. PRINT PRTEMP.DAT'

```



```

4          //' Choose and enter a name for your'
5          ' temporary print file, e.g. PRTTEMP'//)

42285      ACCEPT 42285,FILENAME
          FORMAT (A)
          PRT = 3
          OPEN (3,FILE=FILENAME,STATUS='NEW')
ELSE
          PRT = 5
END IF

C Step 6:
C Retrieve (GET) 1 record at a time from PORT2 into
C the Buffer (FULLREC), and print from the buffer

42300 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
          type *,'The record has been printed'
          type *,'Hit the RETURN key to continue'
          accept 42305,answer
42305      format (A)
          CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
          IF (OPENPORT) THEN
              CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
              CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
              OPENPORT = .FALSE.
          END IF
          go to 42000
      END IF

42310 CALL DTR$GET_PORT (DAB, %REF(FULLREC))
C Print the detail line from the fortran buffer
      IF (CHOICE .EQ. '2') THEN
          go to 42400
      END IF

C This section for printing the Abbreviated report
      RECPRT = RECPRT+1
      IF (RECPRT .GT. 50) THEN
          RECPRT = 1
          IPAGE = IPAGE+1
          CALL LIB$ERASE_PAGE (1,1)
          WRITE (PRT,42315) IPAGE,Xfadb,Xdesig,Xcntry,Xequiv
42315  FORMAT ('INASA ALLOY DATABASE ABBREVIATED REPORT',
1         '      Page ',I4,
2         //' List of U.S. Alloys with exactly the same',
3         ' composition as the foreign alloy'
4         ' of record number = ',A7,' designation = ',A30,
5         ' from country = ',A15,' and of U.S. Equivalent = ',A25,
6         //' Rec. No. Designation',20X,'US Equivalent',12X,
7         ' Temper',10X,'Country',9X,'Form'//)
      END IF

          WRITE (PRT,42325) FADB,DESG,EQUIV,TEMPR,XCNTRY,FORMNUM
42325  FORMAT (' ',A7,2X,A30,1X,A25,1X,A15,1X,A15,1X,A30)
          GO TO 42300

C This section for full report

42400 CALL LIB$ERASE_PAGE (1,1)

          IPAGE = IPAGE+1

```

```

WRITE (PRT,42405) IPAGE,Xfadb,Xdesig,Xcntry,Xequiv
42405 FORMAT ('INASA ALLOY DATABASE FULL REPORT',
1          ' Page ',I4,
2          '// List of U.S. Alloys with exactly the same',
3          ' composition as the foreign alloy'
4          ' of record number = ',A7,' designation = ',A30,
5          ' from country = ',A15,' and of U.S. Equivalent = ',A25/)

WRITE (PRT,42415) FADB,DESG,EQUIV,XCNTRY
42415 FORMAT (' Rec#: ',A7,' Designation: ',A30,' US_Equivalent: ',A25,
1          ' Country: ',A15/)

WRITE (PRT,42425) ALTYP,TEMPR,FORMNUM,ORIGIN
42425 FORMAT (' Type: ',A4,' Temper: ',A15,' Form: ',A30,
1          ' Orig. Org: ',A10/)

WRITE (PRT,42435)
42435 FORMAT (' COMPOSITION:')

WRITE (PRT,42445)
42445 FORMAT (' [Wt.%]',6X,'Al',6X,'Si',6X,'Fe',6X,'Cu',6X,'Mn',6X,
1          'Mg',6X,'Zn',6X,'V ',6X,'Ti',6X,'Zr',6X,'Cr',6X,'Ni',6X,
2          'Pb',6X,'Sn')

WRITE (PRT,42455) MINAL,MINSI,MINFE,MINCU,MINMN,MINMG,MINZN,
1          MINV,MINTI,MINZR,MINCR,MINNI,MINPB,MINSN
42455 FORMAT (8X,'MIN: ',14(A7,1X))
WRITE (PRT,42465) MAXAL,MAXSI,MAXFE,MAXCU,MAXMN,MAXMG,MAXZN,
1          MAXV,MAXTI,MAXZR,MAXCR,MAXNI,MAXPB,MAXSN
42465 FORMAT (8X,'MAX: ',14(A7,1X)/)
WRITE (PRT,42475) OTHER1,OTHER2,SPECS1
42475 FORMAT (13X,A10,2X,A10,42X,'Specifications:[1] ',A30)
WRITE (PRT,42485) MINO1,MINO2,SPECS2
42485 FORMAT (8X,'MIN: ',A7,6X,A7,61X,'[2] ',A30)
WRITE (PRT,42495) MAXO1,MAXO2,SPECS2
42495 FORMAT (8X,'MAX: ',A7,6X,A7,61X,'[3] ',A30)
WRITE (PRT,42505) SPECS4
42505 FORMAT (92X,'[4] ',A30)
WRITE (PRT,42515) SPECS5
42515 FORMAT (92X,'[5] ',A30)
WRITE (PRT,42525) SCCRTG
42525 FORMAT (19X,'MIN MAX TYP UNITS',11X,'SCC Rating: ',A4)
WRITE (PRT,42535) MINYLD,MAXYLD,TYPYLD,YLUNIT
42535 FORMAT (' Yield Strength: ',3(A3,2X),A6)
WRITE (PRT,42545) MINTNS,MAXTNS,TYPTNS,TNUNIT
42545 FORMAT (' Tensile Strength: ',3(A3,2X),A6,10X,'NOTES: ',A60)

IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
GO TO 42570
END IF
type *, ' '
write (prt,42555)
42555 format (' Hit the RETURN key to continue printing, To stop',
1          ' printing type S, then Hit the RETURN key: ',S)
accept 42565,answer
42565 format (A)
if ((answer .eq. 'S') .OR. (answer .eq. 's')) then
call lib$spawn ('set term/width=80')
return
end if

```

```

42570 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
      type *, 'The report has been printed'
      type *, 'Hit RETURN to go back to the Main Menu'
      accept 42575, answer
42575  format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      IF (OPENPORT) THEN
          CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
          CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
          OPENPORT = .FALSE.
      END IF
      call lib$spawn ('set term/width=80')
      return
      END IF

      GO TO 42300

```

```

C ***** * * * * * *****
C
C Standard Reoports: Option 5
C
C For one U.S. alloy, find all similar foreign alloys from
C one country: This is Search 1.f in the specifications
C
C The following logic is used:
C 1. Accept the U.S. Designation as input
C 2. Accept the foreign country code as input [to search from]
C
C Just search for all foreign alloys from the given country
C with U.S. Equivalents equal to that U.S. alloy Designation
C
C ***** * * * * * *****

```

```

50000 CALL LIB$ERASE_PAGE (1,1)
50010 TYPE 50015
50015 FORMAT (/T21, ' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports: [5]'
2      //' -----'
3      //' For one U.S. alloy, find all similar foreign'
4      //' alloys from one country'
5      //' Enter the U.S. designation and foreign contry code'

6      //' 01=Australia      06=Finland      11=Norway'
7      //'                16=United Kingdom'
8      //' 02=Canada        07=France      12=South Africa'
9      //' 17=U.S.A.'
A      //' 03=China          08=Japan      13=Spain'
B      //'                18=U.S.S.R.'
C      //' 04=Denmark      09=Mexico    14=Sweden'
D      //'                19=West Germany'
E      //' 05=East Germany 10=New Zealand 15=Switzerland'
F      //' 20=Italy'
F      //' 21=Belgium      22=Netherlands 23=Portugal'
F      //' 30=ISO'
G      //' First, enter U.S. designation within double'
H      //' quotation marks',
I      //' and hit the RETURN key'/)

50020 ACCEPT 50025, DSGKEY
50025 FORMAT (A)

```

```
50030 TYPE 50035
50035 FORMAT (/ ' Now, enter Country code from the table,'
1         ' Then hit the RETURN key'
2         / ' Or, To return to the previous Menu, enter P'
3         / ' Then hit the RETURN key'//)
```

```
ACCEPT 50045,CNTRY
50045 FORMAT (A2)
```

```
IF ((CNTRY(1:1) .EQ. 'P') .OR. (CNTRY(1:1) .EQ. 'p')) THEN
    GO TO 400
END IF
```

C Extract country text from the country literals table

```
CALL jsCNTRY (cntry,icntry,Xcntry)
IF (ICNTRY .EQ. 31) THEN
    type *,' '
    type *,'Country Code out of range, hit RETURN to try again'
    type *,'Or type M, then hit RETURN to return to Main Menu'
    accept 50055,answer
50055 format (A)
    IF ((ANSWER .EQ. 'M') .OR. (ANSWER .EQ. 'm')) THEN
        RETURN
    ELSE
        GO TO 50030
    END IF
END IF
```

```
type *,' '
type *,'Searching for records, Please stand by'
CALL DTR$COMMAND (DAB, 'FIND !CMD WITH COUNTRY = !CMD AND
1 DESIG = !CMD;',DOMAIN,CNTRY,DSGKEY)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
```

C Check for possible datatrieve errors

```
IF ((DAB$!L_CONDITION .NE. %LOC(DTR$ SUCCESS)) .OR.
1 (DAB$!L_CONDITION .EQ. %LOC(DTR$ ERROR))) THEN
    CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
    type *,'There was a Fatal Datatrieve ERROR'
    type *,'Hit RETURN to restart'
    accept 50065,answer
50065 format (A)
    RETURN
END IF
```

C Investigate the number of records found,
C if no records were found then return to try another Rse

```
CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')
IF (DAB$W_STATE .EQ. DTR$K_STL_PGET) THEN
    CALL DTR$GET_PORT (DAB, NUM_RECS)
    CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
END IF
IF (NUM_RECS .EQ. 0) THEN
    type *,'No similar alloys found from that country'
    type *,'Hit RETURN to try another country'
    accept 50075,answer
50075 format (A)
    GO TO 50000
END IF
```

C Program will branch here only if RSE has been successful,

```

50100 TYPE 50105
50105 FORMAT (/' Select one of the following options: then hit RETURN'
1          /' 1 = Print only standard fields'
2          //' 2 = Print all fields'
3          //' P = Do not print, just return to the previous menu'//)

ACCEPT 50115,CHOICE
50115 FORMAT (A)
IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
GO TO 400
END IF
IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
type *, 'Wrong entry, hit RETURN to try again'
accept 50125,answer
50125 format (A)
go to 50100
END IF
CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')
C Check for possible datatrieve errors
IF ((DAB$L_CONDITION .NE. %LOC(DTR$ SUCCESS)) .OR.
1 (DAB$L_CONDITION .EQ. %LOC(DTR$ ERROR))) THEN
CALL DTR$DTR (DAB, DTR$M OPT CMD)
type *, 'There was a Fatal Datatrieve ERROR'
type *, 'Hit RETURN to restart'
accept 50135,answer
50135 format (A)
RETURN
END IF

C Choose between screen display and printed report
50140 TYPE 50145
50145 FORMAT (/' Do you want to display the report on the screen'
1          /' or print it to a temporary file for later use?'
2          //' Please respond with S or F:'//)
accept 50155,answer
50155 format (A)
C Input Error-Trap
1 IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
type *, 'Wrong entry, please hit RETURN and try again'
accept 50165,answer
50165 format (A)
GO TO 50140
END IF

IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
WRITE (*,10715)
10715 FORMAT('DUMMY FORMAT')
ACCEPT 50175,FILENAME
50175 FORMAT (A)
PRT = 3
OPEN (3,FILE=FILENAME,STATUS='NEW')
ELSE
PRT = 5
END IF
CALL LIB$ERASE PAGE (1,1)
IF ((ANSWER .EQ. 'S') .OR. (ANSWER .EQ. 's')) THEN
CALL LIB$SPAWN ('SET TERM/WIDTH=132')

```

```

END IF
IPAGE = 0
RECPRT = 50
50200 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
    type *, ' '
    type *, 'The Report has been printed'
    type *, 'Hit the RETURN key to continue'
    accept 50205, answer
50205    format (A)
    CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
    IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
        OPENPORT = .FALSE.
    END IF
    CALL LIB$SPAWN ('SET TERM/WIDTH=80')
    RETURN
END IF

50210 CALL DTR$GET_PORT (DAB, %REF(FULLREC))

    IF (CHOICE .EQ. '2') THEN
        go to 50300
    end if

C This section for abbreviated report
    RECPRT = RECPRT+1
    IF (RECPRT .GT. 50) THEN
        RECPRT = 1
        IPAGE = IPAGE+1
        CALL LIB$ERASE_PAGE (1,1)
        WRITE (PRT,50215) IPAGE, Xcntry, desg
50215    FORMAT ('1NASA ALLOY DATABASE ABBREVIATED REPORT',
1        ' Page ', I4,
2        '/ List of Alloys from ', A15, ' that are similar'
3        ' to the U.S. alloy designation ', A30,
4        '// Rec. No. Designation', 20X, 'US Equivalent', 12X,
5        ' Temper', 10X, 'Country', 9X, 'Form'/)
    END IF
    WRITE (PRT,50225) FADB, DESG, EQUIV, TEMPR, XCNTY, FORMNUM
50225    FORMAT (' ', A7, 2X, A30, 1X, A25, 1X, A15, 1X, A15, 1X, A30)
    GO TO 50200

C This section for full report

50300 CALL LIB$ERASE_PAGE (1,1)
    IPAGE = IPAGE+1
    WRITE (PRT,50305) IPAGE, Xcntry, desg
50305    FORMAT ('1NASA ALLOY DATABASE FULL REPORT',
1        ' Page ', I4,
2        '/ List of Alloys from ', A15, ' that are similar'
3        ' to the U.S. alloy designation ', A30//)

    WRITE (PRT,50315) FADB, DESG, EQUIV, XCNTY
50315    FORMAT (' Rec#: ', A7, ' Designation: ', A30, ' US Equivalent: ', A25,
1        ' Country: ', A15/)
    WRITE (PRT,50325) ALTYP, TEMPR, FORMNUM, ORIGIN
50325    FORMAT (' Type: ', A4, ' Temper: ', A15, ' Form: ', A30,
1        ' Orig. Org: ', A10/)
    WRITE (PRT,50335)
50335    FORMAT (' COMPOSITION:')

```

```

WRITE (PRT,50345)
50345 FORMAT (' [Wt.%]',6X,'Al',6X,'Si',6X,'Fe',6X,'Cu',6X,'Mn',6X,
1 'Mg',6X,'Zn',6X,'V ',6X,'Ti',6X,'Zr',6X,'Cr',6X,'Ni',6X,
2 'Pb',6X,'Sn')
WRITE (PRT,50355) MINAL,MINSI,MINFE,MINCU,MINMN,MINMG,MINZN,
1 MINV,MINTI,MINZR,MINCR,MINNI,MINPB,MINSN
50355 FORMAT (8X,'MIN: ',14(A7,1X))
WRITE (PRT,50365) MAXAL,MAXSI,MAXFE,MAXCU,MAXMN,MAXMG,MAXZN,
1 MAXV,MAXTI,MAXZR,MAXCR,MAXNI,MAXPB,MAXSN
50365 FORMAT (8X,'MAX: ',14(A7,1X)/)
WRITE (PRT,50375) OTHER1,OTHER2,SPECS1
50375 FORMAT (13X,A10,2X,A10,42X,'Specifications:[1] ',A30)
WRITE (PRT,50385) MINO1,MINO2,SPECS2
50385 FORMAT (8X,'MIN: ',A7,6X,A7,61X,'[2] ',A30)
WRITE (PRT,50395) MAXO1,MAXO2,SPECS2
50395 FORMAT (8X,'MAX: ',A7,6X,A7,61X,'[3] ',A30)
WRITE (PRT,50405) SPECS4
50405 FORMAT (92X,'[4] ',A30)
WRITE (PRT,50415) SPECS5
50415 FORMAT (92X,'[5] ',A30)
WRITE (PRT,50425) SCCRTG
50425 FORMAT (19X,'MIN MAX TYP UNITS',11X,'SCC Rating: ',A4)
WRITE (PRT,50435) MINYLD,MAXYLD,TYPYLD,YLUNIT
50435 FORMAT (' Yield Strength: ',3(A3,2X),A6)
WRITE (PRT,50445) MINTNS,MAXTNS,TYPTNS,TNUNIT
50445 FORMAT (' Tensile Strength: ',3(A3,2X),A6,10X,'NOTES: ',A60)
IF ((ANSWER.EQ. 'F') .OR. (ANSWER.EQ. 'f')) THEN
GO TO 50460
END IF
type *,' '
write (prt,50447)
50447 format (' Hit the RETURN key to continue printing, To stop',
1 ' printing type S, then Hit the RETURN key: ',,$)
accept 50450,answer
50450 format (A)
if ((answer.eq. 'S') .OR. (answer.eq. 's')) then
call lib$spawn ('set term/width=80')
return
end if

50460 GO TO 50200

```

```

C ***** * * * * * *****
C
C Option 6 *
C For one U.S. alloy, find all similar foreign alloys *
C from all countries *
C *
C This is Search 1.g in the specifications *
C *
C The following logic is used: *
C 1. Accept the U.S. Designation as input *
C *
C Just search for all foreign alloys with U.S. Equivalentents *
C equal to that U.S. alloy Designation *
C *
C ***** * * * * * *****

```

```

60000 CALL LIB$ERASE_PAGE (1,1)

```

```

TYPE 60015
60015 FORMAT (/T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports: {6}'
2      //' -----'
3      //' For one U.S. alloy, find all similar foreign'
4      //' alloys from all countries'
5      //' Enter U.S. designation within double quotation marks'
6      //' and hit the RETURN key'
7      //' Or, To return to the previous Menu, enter P'
8      //' Then hit the RETURN key'//)

ACCEPT 60025,DSGKEY
60025 FORMAT (A)

IF ((DSGKEY(1:1) .EQ. 'P') .OR. (DSGKEY(1:1) .EQ. 'p')) THEN
GO TO 400
END IF
type *,' '
type *,'Searching for records, Please stand by'
CALL DTR$COMMAND (DAB, 'FIND !CMD WITH US_EQV = !CMD AND
1 COUNTRY NOT = "17";',DOMAIN,DSGKEY)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
C Check for possible datatrieve errors
IF ((DAB$!_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1 (DAB$!_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
type *,'There was a Fatal Datatrieve ERROR'
type *,'Hit RETURN to restart'
accept 60035,answer
60035 format (A)
RETURN
END IF

C Investigate the number of records found,
C if no records were found then return to try another Rse

CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')
IF (DAB$W STATE .EQ. DTR$K_STL_PGET) THEN
CALL DTR$GET_PORT (DAB, NUM_RECS)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
END IF
IF (NUM_RECS .EQ. 0) THEN
type *,'No foreign alloys found similar to that designation'
type *,'Hit RETURN to try another designation'
accept 60045,answer
60045 format (A)
GO TO 60000
END IF

C Program will branch here only if RSE has been successful,
60100 TYPE 60105
60105 FORMAT (/ ' Select one of the following options: then hit RETURN'
1      //' 1 = Print only standard fields'
2      //' 2 = Print all fields'
3      //' P = Do not print, just return to the previous menu'//)

ACCEPT 60115,CHOICE
60115 FORMAT (A)

IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
GO TO 400

```



```
END IF
IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
  type *, 'Wrong entry, hit RETURN to try again'
  accept 60125,answer
60125  format (A)
      go to 60100
END IF

CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')

C Check for possible datatrieve errors
IF ((DAB$L_CONDITION .NE. %LOC(DTR$ SUCCESS)) .OR.
1  (DAB$L_CONDITION .EQ. %LOC(DTR$ ERROR))) THEN
  CALL DTR$DTR (DAB, DTR$M OPT CMD)
  type *, 'There was a Fatal Datatrieve ERROR'
  type *, 'Hit RETURN to restart'
  accept 60135,answer
60135  format (A)
      RETURN
END IF

C Choose between screen display and printed report
60140 TYPE 60145
60145 FORMAT (/' Do you want to display the report on the screen'
1  /' or print it to a temporary file for later use?'
2  /' Please respond with S or F: '/')
  accept 60155,answer
60155 format (A)
C Input Error-Trap
1  IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
      ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
  type *, 'Wrong entry, please hit RETURN and try again'
  accept 60165,answer
60165  format (A)
      GO TO 60140
  END IF
IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
  WRITE (*,10715)
  ACCEPT 60175,FILENAME
60175  FORMAT (A)
      PRT = 3
      OPEN (3,FILE=FILENAME,STATUS='NEW')
ELSE
  PRT = 5
END IF

CALL LIB$ERASE_PAGE (1,1)
IF ((ANSWER .EQ. 'S') .OR. (ANSWER .EQ. 's')) THEN
  CALL LIB$SPAWN ('SET TERM/WIDTH=132')
END IF
IPAGE = 0
RECPRT = 50

60200 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
  type *, ' '
  type *, 'The Report has been printed'
  type *, 'Hit the RETURN key to continue'
  accept 60205,answer
60205  format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      IF (OPENPORT) THEN
```

```

        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
        OPENPORT = .FALSE.
        END IF
        CALL LIB$SPAWN ('SET TERM/WIDTH=80')
        RETURN
    END IF

```

```

60210 CALL DTR$GET_PORT (DAB, %REF(FULLREC))

```

```

        IF (CHOICE .EQ. '2') THEN
            go to 60300
        end if

```

C This section for abbreviated report

```

        RECPRT = RECPRT+1
        IF (RECPRT .GT. 50) THEN
            RECPRT = 1
            IPAGE = IPAGE+1
            CALL LIB$ERASE PAGE (1,1)
            WRITE (PRT,60215) IPAGE,dsgkey
60215 FORMAT ('1NASA ALLOY DATABASE ABBREVIATED REPORT',
1           '          Page ',I4,
2           '/ List of all foreign Alloys that are similar'
3           ' to the U.S. alloy designation ',A30
4           '// Rec. No. Designation',20X,'US Equivalent',12X,
5           ' Temper',10X,'Country',9X,'Form'/)
        END IF

```

```

        WRITE (PRT,60225) FADB,DESG,EQUIV,TEMPR,XCNTRY,FORMNUM
60225 FORMAT (' ',A7,2X,A30,1X,A25,1X,A15,1X,A15,1X,A30)
        GO TO 60200

```

C This section for full report

```

60300 CALL LIB$ERASE PAGE (1,1)
        IPAGE = IPAGE+1
        WRITE (PRT,60305) IPAGE,desg
60305 FORMAT ('1NASA ALLOY DATABASE FULL REPORT',
1           '          Page ',I4,
2           '/ List of all foreign Alloys that are similar'
3           ' to the U.S. alloy designation ',A30//)
        WRITE (PRT,60315) FADB,DESG,EQUIV,XCNTRY
60315 FORMAT (' Rec#: ',A7,' Designation: ',A30,' US_Equivalent: ',A25,
1           'Country: ',A15/)
        WRITE (PRT,60325) ALTYP,TEMPR,FORMNUM,ORIGIN
60325 FORMAT (' Type: ',A4,' Temper: ',A15,' Form: ',A30,
1           ' Orig. Org: ',A10/)
        WRITE (PRT,60335)
60335 FORMAT (' COMPOSITION:')
        WRITE (PRT,60345)
60345 FORMAT (' [Wt.%]',6X,'Al',6X,'Si',6X,'Fe',6X,'Cu',6X,'Mn',6X,
1           'Mg',6X,'Zn',6X,'V ',6X,'Ti',6X,'Zr',6X,'Cr',6X,'Ni',6X,
2           'Pb',6X,'Sn')
        WRITE (PRT,60355) MINAL,MINSI,MINFE,MINCU,MINMN,MINMG,MINZN,
1           MINV,MINTI,MINZR,MINCR,MINNI,MINPB,MINSN
60355 FORMAT (8X,'MIN: ',14(A7,1X))
        WRITE (PRT,60365) MAXAL,MAXSI,MAXFE,MAXCU,MAXMN,MAXMG,MAXZN,
1           MAXV,MAXTI,MAXZR,MAXCR,MAXNI,MAXPB,MAXSN
60365 FORMAT (8X,'MAX: ',14(A7,1X)/)
        WRITE (PRT,60375) OTHER1,OTHER2,SPECS1
60375 FORMAT (13X,A10,2X,A10,42X,'Specifications:[1] ',A30)

```

```

WRITE (PRT,60385) MINO1,MINO2,SPECS2
60385 FORMAT (8X,'MIN: ',A7,6X,A7,61X,'[2] ',A30)
WRITE (PRT,60395) MAXO1,MAXO2,SPECS2
60395 FORMAT (8X,'MAX: ',A7,6X,A7,61X,'[3] ',A30)
WRITE (PRT,60405) SPECS4
60405 FORMAT (92X,'[4] ',A30)
WRITE (PRT,60415) SPECS5
60415 FORMAT (92X,'[5] ',A30)
WRITE (PRT,60425) SCCRTG
60425 FORMAT (19X,'MIN MAX TYP UNITS',11X,'SCC Rating: ',A4)
WRITE (PRT,60435) MINYLD,MAXYLD,TYPYLD,YLUNIT
60435 FORMAT (' Yield Strength: ',3(A3,2X),A6)
WRITE (PRT,60445) MINTNS,MAXTNS,TYPTNS,TNUNIT
60445 FORMAT (' Tensile Strength: ',3(A3,2X),A6,10X,'NOTES: ',A60)
IF ((ANSWER.EQ. 'F') .OR. (ANSWER.EQ. 'f')) THEN
  GO TO 60460
END IF

```

```

type *,' '
write (prt,60447)
60447 format (' Hit the RETURN key to continue printing, To stop',
1 ' printing type S, then Hit the RETURN key: ',S)
accept 60450,answer
60450 format (A)
if ((answer.eq. 'S') .OR. (answer.eq. 's')) then
  call lib$spawn ('set term/width=80')
  return
end if

```

```
60460 GO TO 60200
```

```

C ***** * * * * * *****
C
C Option 7 *
C For a range of foreign alloys, find all similar U.S. alloys *
C *
C This is Search 1.c in the specifications *
C *
C The following logic is used: *
C 1. Accept the first and last of the foreign Designations *
C as input *
C *
C Just search for all U.S. alloys with their designation *
C lying within the specified range, then print *
C *
C ***** * * * * * *****

```

```

70000 CALL LIB$ERASE_PAGE (1,1)
70010 TYPE 70015
70015 FORMAT (/T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1 // ' Producing Standard Reports: [7]'
2 // ' -----'
3 // ' For a range of foreign alloys, find all similar',
4 ' U.S. alloys'
5 // ' Enter the range of foreign designations,'
6 ' within double quotation marks'
7 // ' Or, To return to the previous Menu, enter P'
8 // ' Then hit the RETURN key'//)

```

```
TYPE *, 'Enter the lower value of the foreign designation range'
ACCEPT 70025, DSGKEY1
70025 FORMAT (A)
IF ((DSGKEY1(1:1) .EQ. 'P') .OR. (DSGKEY1(1:1) .EQ. 'p')) THEN
    GO TO 400
END IF
type *, ' '
TYPE *, 'Enter the upper value of the foreign designation range'
ACCEPT 70027, DSGKEY2
70027 FORMAT (A)
type *, ' '
type *, 'Searching for records, Please stand by'

CALL DTR$COMMAND (DAB, 'FIND !CMD WITH COUNTRY = "17" AND
1 DESIG BT !CMD AND !CMD;', DOMAIN, DSGKEY1, DSGKEY2)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

C Check for possible datatrieve errors
IF ((DAB$SL_CONDITION .NE. %LOC(DTR$ SUCCESS)) .OR.
1 (DAB$SL_CONDITION .EQ. %LOC(DTR$ ERROR))) THEN
    CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
    type *, 'There was a Fatal Datatrieve ERROR'
    type *, 'Hit RETURN to restart'
    accept 70035, answer
70035 format (A)
    RETURN
END IF

C Investigate the number of records found,
C if no records were found then return to try another Rse

CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')
IF (DAB$W STATE .EQ. DTR$K_STL_PGET) THEN
    CALL DTR$GET_PORT (DAB, NUM_RECS)
    CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
END IF
IF (NUM_RECS .EQ. 0) THEN
    type *, 'No U.S. alloys found in that designation range'
    type *, 'Hit RETURN to try another range'
    accept 70045, answer
70045 format (A)
    GO TO 70000
END IF

C Program will branch here only if RSE has been successful,

70100 TYPE 70105
70105 FORMAT (/' Select one of the following options: then hit RETURN'
1 /' 1 = Print only standard fields'
2 //' 2 = Print all fields'
3 //' P = Do not print, just return to the previous menu'/)

ACCEPT 70115, CHOICE
70115 FORMAT (A)
IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
    GO TO 400
END IF
IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
    type *, 'Wrong entry, hit RETURN to try again'
    accept 70125, answer
70125 format (A)
```

go to 70100
 END IF

CALL DTR\$COMMAND (DAB, 'PORT2 = CURRENT;')

C Check for possible datatrieve errors

```

  IF ((DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1   (DAB$L_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
    CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
    type *, 'There was a Fatal Datatrieve ERROR'
    type *, 'Hit RETURN to restart'
    accept 70135,answer
70135  format (A)
    RETURN
  END IF
  
```

C Choose between screen display and printed report

```

70140 TYPE 70145
70145 FORMAT (/ ' Do you want to display the report on the screen'
1         /' or print it to a temporary file for later use?'
2         //' Please respond with S or F: '/')
    accept 70155,answer
70155 format (A)
  
```

C Input Error-Trap

```

1   IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
      ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
    type *, 'Wrong entry, please hit RETURN and try again'
    accept 70165,answer
70165  format (A)
    GO TO 70140
  END IF
  
```

```

  IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
    WRITE (*,10715)
    ACCEPT 70175,FILENAME
70175  FORMAT (A)
    PRT = 3
    OPEN (3,FILE=FILENAME,STATUS='NEW')
  ELSE
    PRT = 5
  END IF
  
```

```

  CALL LIB$ERASE_PAGE (1,1)
  IF ((ANSWER .EQ. 'S') .OR. (ANSWER .EQ. 's')) THEN
    CALL LIB$SPAWN ('SET TERM/WIDTH=132')
  END IF
  
```

```

  IPAGE = 0
  RECPRT = 50
  
```

```

70200 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
    type *, ' '
    type *, 'The Report has been printed'
    type *, 'Hit the RETURN key to continue'
    accept 70205,answer
  
```

```

70205  format (A)
    CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
    IF (OPENPORT) THEN
      CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
      CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
      OPENPORT = .FALSE.
    END IF
    CALL LIB$SPAWN ('SET TERM/WIDTH=80')
  
```

```

RETURN
END IF

```

```

70210 CALL DTR$GET_PORT (DAB, %REF(FULLREC))

```

```

C Extract the country code from the fortran buffer to be used to
C pull out the country literal from the literal pool
  CNTRY = CONTRY
  CALL jsCNTRY (cntry, icntry, Xcntry)
  IF (CHOICE .EQ. '2') THEN
    go to 70300
  end if

```

```

C This section for abbreviated report

```

```

  RECPRT = RECPRT+1
  IF (RECPRT .GT. 50) THEN
    RECPRT = 1
    IPAGE = IPAGE+1
    CALL LIB$ERASE_PAGE (1,1)
    WRITE (PRT,70215) IPAGE,dsgkey1,dsgkey2
70215 FORMAT ('1NASA ALLOY DATABASE ABBREVIATED REPORT',
1          '          Page ',I4,
2          '/ List of all U.S. Alloys that are similar'
3          ' to the foreign alloys in the range'
4          '/ ' ',A30,' =< designation >= ',A30,
5          '// Rec. No. Designation',20X,'US Equivalent',12X,
6          ' Temper',10X,'Country',9X,'Form'/)
  END IF

```

```

  WRITE (PRT,70225) FADB,DESG,EQUIV,TEMPR,XCNTRY,FORMNUM
70225 FORMAT (' ',A7,2X,A30,1X,A25,1X,A15,1X,A15,1X,A30)
  GO TO 70200

```

```

C This section for full report

```

```

70300 CALL LIB$ERASE_PAGE (1,1)
  IPAGE = IPAGE+1
  WRITE (PRT,70305) IPAGE,dsgkey1,dsgkey2
70305 FORMAT ('1NASA ALLOY DATABASE FULL REPORT',
1          '          Page ',I4,
2          '/ List of all U.S. Alloys that are similar'
3          ' to the foreign alloys in the range',
4          '/ ' ',A30,' =< designation >= ',A30//)

  WRITE (PRT,70315) FADB,DESG,EQUIV,XCNTRY
70315 FORMAT (' Rec#: ',A7,' Designation: ',A30,' US_Equivalent: ',A25,
1          'Country: ',A15/)
  WRITE (PRT,70325) ALTYP,TEMPR,FORMNUM,ORIGIN
70325 FORMAT (' Type: ',A4,' Temper: ',A15,' Form: ',A30,
1          ' Orig. Org: ',A10/)
  WRITE (PRT,70335)
70335 FORMAT (' COMPOSITION:')
  WRITE (PRT,70345)
70345 FORMAT (' [Wt.%]',6X,'Al',6X,'Si',6X,'Fe',6X,'Cu',6X,'Mn',6X,
1          'Mg',6X,'Zn',6X,'V ',6X,'Ti',6X,'Zr',6X,'Cr',6X,'Ni',6X,
2          'Pb',6X,'Sn')
  WRITE (PRT,70355) MINAL,MINSI,MINFE,MINCU,MINMN,MINMG,MINZN,
1          MINV,MINTI,MINZR,MINCR,MINNI,MINPB,MINSN
70355 FORMAT (8X,'MIN: ',14(A7,1X))
  WRITE (PRT,70365) MAXAL,MAXSI,MAXFE,MAXCU,MAXMN,MAXMG,MAXZN,
1          MAXV,MAXTI,MAXZR,MAXCR,MAXNI,MAXPB,MAXSN
70365 FORMAT (8X,'MAX: ',14(A7,1X)/)

```

```

WRITE (PRT,70375) OTHER1,OTHER2,SPECS1
70375 FORMAT (13X,A10,2X,A10,42X,'Specifications:[1] ',A30)
WRITE (PRT,70385) MINO1,MINO2,SPECS2
70385 FORMAT (8X,'MIN: ',A7,6X,A7,61X,'[2] ',A30)
WRITE (PRT,70395) MAXO1,MAXO2,SPECS2
70395 FORMAT (8X,'MAX: ',A7,6X,A7,61X,'[3] ',A30)
WRITE (PRT,70405) SPECS4
70405 FORMAT (92X,'[4] ',A30)
WRITE (PRT,70415) SPECS5
70415 FORMAT (92X,'[5] ',A30)
WRITE (PRT,70425) SCCRTG
70425 FORMAT (19X,'MIN MAX TYP UNITS',11X,'SCC Rating: ',A4)
WRITE (PRT,70435) MINYLD,MAXYLD,TYPYLD,YLUNIT
70435 FORMAT (' Yield Strength: ',3(A3,2X),A6)
WRITE (PRT,70445) MINTNS,MAXTNS,TYPTNS,TNUNIT
70445 FORMAT (' Tensile Strength: ',3(A3,2X),A6,10X,'NOTES: ',A60)

```

```

IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
  GO TO 70460
END IF
type *, ' '
write (prt,70447)
70447 format (' Hit the RETURN key to continue printing, To stop',
1 ' printing type S, then Hit the RETURN key: ',S)
accept 70450,answer
70450 format (A)
if ((answer .eq. 'S') .OR. (answer .eq. 's')) then
  call lib$spawn ('set term/width=80')
  return
end if

```

```
70460 GO TO 70200
```

```

C ***** * * * * * *****
C
C Option 8
C For a range of foreign alloys, find all similar foreign alloys*
C
C This is Search 1.d in the specifications
C NOTE; WE ARE HOLDING THIS SEARCH UNTIL FURTHER CLEARANCE
C IT SEEMS TO BE AMBIGUOUS OR REDUNDANT
C
C ***** * * * * * *****

```

```

C ***** * * * * * *****
C
C Option 9
C For a range of U.S. alloys, find all similar foreign alloys *
C
C This is Search 1.h in the specifications
C
C The following logic is used:
C 1. Accept the first and last of the U.S. Designations as input*
C
C Just search for all foreign alloys with their U.S. equivalent *
C lying within the specified range of designations, then print *
C
C ***** * * * * * *****

```

```
79000 CALL LIB$ERASE_PAGE (1,1)
```

```

79010 TYPE 79015
79015 FORMAT (/T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Producing Standard Reports: [9]'
2      /' -----'
3      //' For a range of U.S. alloys, find all similar'
4      ' foreign alloys'
5      //' Enter the range of U.S. designations, within'
6      ' double quotation marks'
7      //' Or, To return to the previous Menu, enter P'
8      /' Then hit the RETURN key'//)

      TYPE *,'Enter the lower value of the U.S. designation range'

ACCEPT 79025,DSGKEY1
79025 FORMAT (A)

      IF ((DSGKEY1(1:1) .EQ. 'P') .OR. (DSGKEY1(1:1) .EQ. 'p')) THEN
      GO TO 400
      END IF

      type *,' '
      TYPE *,'Enter the upper value of the foreign designation range'

ACCEPT 79027,DSGKEY2
79027 FORMAT (A)

      type *,' '
      type *,'Searching for records, Please stand by'

      CALL DTR$COMMAND (DAB, 'FIND !CMD WITH COUNTRY NOT = "17" AND
1 DESIG BT !CMD AND !CMD;',DOMAIN,DSGKEY1,DSGKEY2)

      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)

C Check for possible datatrieve errors

      IF ((DAB$L_CONDITION .NE. %LOC(DTR$ SUCCESS)) .OR.
1      (DAB$L_CONDITION .EQ. %LOC(DTR$ ERROR))) THEN
      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      type *,'There was a Fatal Datatrieve ERROR'
      type *,'Hit RETURN to restart'
      accept 79035,answer
79035      format (A)
      RETURN
      END IF

C Investigate the number of records found,
C if no records were found then return to try another Rse
      CALL DTR$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')
      IF (DAB$W_STATE .EQ. DTR$K_STL_PGET) THEN
      CALL DTR$GET_PORT (DAB, NUM_RECS)
      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
      END IF
      IF (NUM_RECS .EQ. 0) THEN
      type *,'No foreign alloys found in that designation range'
      type *,'Hit RETURN to try another range'
      accept 79045,answer
79045      format (A)

```



```

        GO TO 79000
    END IF

C Program will branch here only if RSE has been successful,
79100 TYPE 79105
79105 FORMAT (/' Select one of the following options: then hit RETURN'
1          /' 1 = Print only standard fields'
2          //' 2 = Print all fields'
3          //' P = Do not print, just return to the previous menu'/)

    ACCEPT 79115,CHOICE
79115 FORMAT (A)
    IF ((CHOICE .EQ. 'P') .OR. (CHOICE .EQ. 'p')) THEN
        GO TO 400
    END IF
    IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
        type *,'Wrong entry, hit RETURN to try again'
        accept 79125,answer
79125    format (A)
        go to 79100
    END IF

    CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')

C Check for possible datatrieve errors
    IF ((DAB$L_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1      (DAB$L_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
        CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
        type *,'There was a Fatal Datatrieve ERROR'
        type *,'Hit RETURN to restart'
        accept 79135,answer
79135    format (A)
        RETURN
    END IF

C Choose between screen display and printed report
79140 TYPE 79145
79145 FORMAT (/' Do you want to display the report on the screen'
1          /' or print it to a temporary file for later use?'
2          //' Please respond with S or F:'//)

    accept 79155,answer
79155 format (A)

C Input Error-Trap

1      IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
        ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
        type *,'Wrong entry, please hit RETURN and try again'
        accept 79165,answer
79165    format (A)
        GO TO 79140
    END IF

    IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
        WRITE (*,10715)

        ACCEPT 79175,FILENAME
79175    FORMAT (A)
        PRT = 3
        OPEN (3,FILE=FILENAME,STATUS='NEW')
    ELSE

```

```

      PRT = 5
    END IF

    CALL LIB$ERASE_PAGE (1,1)
    IF ((ANSWER .EQ. 'S') .OR. (ANSWER .EQ. 's')) THEN
      CALL LIB$SPAWN ('SET TERM/WIDTH=132')
    END IF
    IPAGE = 0
    RECPRT = 50
79200 IF (DAB$W_STATE .NE. DTR$K_STL_PGCT) THEN
      type *, ' '
      type *, 'The Report has been printed'
      type *, 'Hit the RETURN key to continue'
      accept 79205, answer
79205  format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
        OPENPORT = .FALSE.
      END IF
      CALL LIB$SPAWN ('SET TERM/WIDTH=80')
      RETURN
    END IF

79210 CALL DTR$GET_PORT (DAB, %REF(FULLREC))

C Extract the country code from the fortran buffer to be used to
C pull out the country literal from the literal pool
  CNTRY = CONTRY
  CALL jsCNTRY (cntry, icntry, Xcntry)

  IF (CHOICE .EQ. '2') THEN
    go to 79300
  end if

C This section for abbreviated report

  RECPRT = RECPRT+1
  IF (RECPRT .GT. 50) THEN
    RECPRT = 1
    IPAGE = IPAGE+1
    CALL LIB$ERASE_PAGE (1,1)
    WRITE (PRT, 79215) IPAGE, dsgkey1, dsgkey2
79215 FORMAT ('1', ' NASA ALLOY DATABASE ABBREVIATED REPORT',
1         ' Page ', I4,
2         '/ List of all foreign Alloys that are similar'
3         ' to the U.S. alloys in the range',
4         '/ ', A30, ' =< designation >= ', A30,
5         '// Rec. No. Designation', 20X, 'US Equivalent', 12X,
6         ' Temper', 10X, 'Country', 9X, 'Form'/)
  END IF

  WRITE (PRT, 79225) FADB, DESG, EQUIV, TEMPR, XCNTY, FORMNUM
79225 FORMAT (' ', A7, 2X, A30, 1X, A25, 1X, A15, 1X, A15, 1X, A30)
  GO TO 79200

C This section for full report

79300 CALL LIB$ERASE_PAGE (1,1)
```

```

IPAGE = IPAGE+1
WRITE (PRT,79305) IPAGE,dsgkey1,dsgkey2
79305 FORMAT ('INASA ALLOY DATABASE FULL REPORT',
1          '                               Page ',I4,
2          '/ ' List of all U.S. Alloys that are similar'
3          ' to the foreign alloys in the range',
4          '/ ' ',A30,' =< designation >= ',A30//)

WRITE (PRT,79315) FADB,DESG,EQUIV,XCNTYR
79315 FORMAT (' Rec#: ',A7,' Designation: ',A30,' US_Equivalent: ',A25,
1          'Country: ',A15/)

WRITE (PRT,79325) ALTYP,TEMPR,FORMNUM,ORIGIN
79325 FORMAT (' Type: ',A4,' Temper: ',A15,' Form: ',A30,
1          ' Orig. Org: ',A10/)

WRITE (PRT,79335)
79335 FORMAT (' COMPOSITION:')

WRITE (PRT,79345)
79345 FORMAT (' [Wt.%]',7X,'Al',6X,'Si',6X,'Fe',6X,'Cu',6X,'Mn',6X,
1          'Mg',6X,'Zn',6X,'V ',6X,'Ti',6X,'Zr',6X,'Cr',6X,'Ni',6X,
2          'Pb',6X,'Sn')

WRITE (PRT,79355) MINAL,MINSI,MINFE,MINCU,MINMN,MINMG,MINZN,
1          MINV,MINTI,MINZR,MINCR,MINNI,MINPB,MINSN
79355 FORMAT (8X,'MIN: ',14(A7,1X))
WRITE (PRT,79365) MAXAL,MAXSI,MAXFE,MAXCU,MAXMN,MAXMG,MAXZN,
1          MAXV,MAXTI,MAXZR,MAXCR,MAXNI,MAXPB,MAXSN
79365 FORMAT (8X,'MAX: ',14(A7,1X)//)
WRITE (PRT,79375) OTHER1,OTHER2,SPECS1
79375 FORMAT (13X,A10,2X,A10,42X,'Specifications:[1] ',A30)
WRITE (PRT,79385) MINO1,MINO2,SPECS2
79385 FORMAT (8X,'MIN: ',A7,6X,A7,61X,'[2] ',A30)
WRITE (PRT,79395) MAXO1,MAXO2,SPECS2
79395 FORMAT (8X,'MAX: ',A7,6X,A7,61X,'[3] ',A30)
WRITE (PRT,79405) SPECS4
79405 FORMAT (92X,'[4] ',A30)
WRITE (PRT,79415) SPECS5
79415 FORMAT (92X,'[5] ',A30)
WRITE (PRT,79425) SCCRTG
79425 FORMAT (19X,'MIN MAX TYP UNITS',11X,'SCC Rating: ',A4)
WRITE (PRT,79435) MINYLD,MAXYLD,TYPYLD,YLUNIT
79435 FORMAT (' Yield Strength: ',3(A3,2X),A6)
WRITE (PRT,79445) MINTNS,MAXTNS,TYPTNS,TNUNIT
79445 FORMAT (' Tensile Strength: ',3(A3,2X),A6,10X,'NOTES: ',A60)
IF ((ANSWER.EQ. 'F') .OR. (ANSWER.EQ. 'f')) THEN
GO TO 79460
END IF

type *,' '
write (prt,79447)
79447 format (' Hit the RETURN key to continue printing, To stop',
1          ' printing type S, then Hit the RETURN key: ',S)

accept 79450,answer
79450 format (A)
if ((answer.eq. 'S') .OR. (answer.eq. 's')) then
call lib$spawn ('set term/width=80')
return
end if
79460 GO TO 79200

```

```
C ***** * * * * * *****
C
C This section for building your own reports
C
C ***** * * * * * *****
```

```
C Build an array with the output from a "SHOW FIELDS" Command
C When the user chooses a field name this array will be searched
```

```
80000 CALL LIB$ERASE_PAGE (1,1)
81000 TYPE 81005
81005 FORMAT (T21,' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1      //' Building your own reports:'
2      //' -----'
3      //' Do you wish to see the field names?'
4      //' Please respond with Y or N'
5      //' When the display begins you may hold the screen'
6      //' at any point'
7      //' Type CTRL-S to hold screen, and CTRL-Q to continue//)
```

```
81100 ACCEPT 81105,ANSWER
81105 FORMAT (A)
```

C Input Error-Trap

```
1      IF (((ANSWER .NE. 'Y') .AND. (ANSWER .NE. 'y')) .AND.
        ((ANSWER .NE. 'N') .AND. (ANSWER .NE. 'n'))) THEN
type *, 'Wrong entry, please hit RETURN and try again'
81205   accept 81205,answer
        format (A)
        GO TO 80000
      END IF
```

```
      IF ((ANSWER .EQ. 'N') .OR. (ANSWER .EQ. 'n')) THEN
        GO TO 82810
      END IF
```

```
type 82205
82205 format (/' Use abbreviated field names that are shown'
1      ' in parenthesis,'
2      '/' where no parenthesized name is shown, use'
3      ' the field name shown//)
```

```
type 82305
82305 format (' Hit the RETURN key to show the fields names//)
```

```
      accept 82315,answer
82315 format (A)
```

```
82400 CALL DTR$COMMAND (DAB,'SHOW FIELDS !CMD;', DOMAIN)
      I = 0
      DO WHILE ((DAB$W_STATE .EQ. DTR$K_STL-MSG) .AND.
1      (DAB$L_CONDITION .EQ. %LOC(DTR$_SHOWTEXT)))
        I = I+1
        SHOWFLDS(I) = MSG_BUFF(1:DAB$W_MSG_LEN)
        CALL DTR$CONTINUE (DAB)
      END DO
```

```
      CALL DTR$DTR (DAB, DTR$_OPT_CMD)
```

C Check for possible datatrieve errors

```

IF (DAB$W_STATE .EQ. DTR$K_STL_MSG) THEN
  GO TO 90000
END IF

```

```

82500 TYPE 82505
82505 FORMAT (' Do you wish to see the field names again?'
1         /* Please respond with Y or N'
2         /* Remember, when the display begins'
3         /* you may hold the screen at any point'/
4         /* Type CTRL-S to hold screen, and CTRL-Q to continue'//)

```

```

82600 ACCEPT 82605,ANSWER
82605 FORMAT (A)

```

C Input Error-Trap

```

1         IF (((ANSWER .NE. 'Y') .AND. (ANSWER .NE. 'y')) .AND.
              ((ANSWER .NE. 'N') .AND. (ANSWER .NE. 'n'))) THEN
              type *, 'Wrong entry, please hit RETURN and try again'
              accept 82705,answer
82705     format (A)
              GO TO 82500
              END IF
IF ((ANSWER .EQ. 'Y') .OR. (ANSWER .EQ. 'y')) THEN
  GO TO 82400
END IF

```

C Erase the Screen and Prompt the user for an RSE - Record
C Selection Expression (Pass this expression to Datatrieve)

```

82810 CALL LIB$ERASE_PAGE (1,1)
82820 TYPE 82825
82825 FORMAT (T21, ' NASA ALLOY DATABASE MANAGEMENT SYSTEM'
1         /* Building your own reports:'
2         /* -----'
3         /* Please type a record selection expression in the'
4         /* following form, and hit RETURN:'
5         /* Field-Name1 = Value1 [ AND Field_Name2 = Value2 ..]'
6         /* You may use any of the following operators -'
7         /* > or GT < or LT = or EQUAL BT or Between '
8         /* starting with '
9         /* CONT or containing'
A         /* Example 1: DESIG = 1050'
B         /* Example 2: DESIG = "A9105" AND COUNTRY = 17'
C         /* Example 3: DESIG = "A9105" AND MIN-SI GT 0.05'
D         /* Example 4: DESIG = 2210 AND MAX-TNS LT 123'
E         /* Example 5: fadb-no = 123'
F         /* Example 6: DESIG CONTAINING abcd ...'
G         /* Example 7: DESIG starting with "A19" ...'
H         /* To return to the Main Menu, just type R,'
I         /* To read HELP information, just type H,'
J         /* Then Hit the RETURN Key')

```

```

82830 READ 82835, EXPRLINE
82835 FORMAT (A)

```

```

IF ((EXPRLINE .EQ. 'R') .OR. (EXPRLINE .EQ. 'r')) THEN
  RETURN
END IF
IF ((EXPRLINE .EQ. 'h') .OR. (EXPRLINE .EQ. 'H')) THEN
  CALL LIB$ERASE_PAGE (1,1)
  CALL LIB$SPAWN('bldownhelp')
  GO TO 82810
END IF

```

type *, 'Searching for record - please stand by'

82840 CALL DTR\$COMMAND (DAB, 'FIND !CMD WITH !CMD;',
1 DOMAIN,EXPRLINE)

CALL DTR\$DTR (DAB, DTR\$M_OPT_CMD)

C Check for possible datatrieve errors

IF ((DAB\$SL_CONDITION .NE. %LOC(DTR\$_SUCCESS)) .OR.
1 (DAB\$SL_CONDITION .EQ. %LOC(DTR\$_ERROR))) THEN
GO TO 90100
END IF

C Investigate the number of records found,
C if no records were found then return to try another Rse

82900 CALL DTR\$COMMAND (DAB, 'STORE PT1 USING NUM = COUNT;')

IF (DAB\$W_STATE .EQ. DTR\$K_STL_PGET) THEN
CALL DTR\$GET_PORT (DAB, NUM_RECS)
CALL DTR\$DTR (DAB, DTR\$M_OPT_CMD)
END IF

IF (NUM_RECS .EQ. 0) THEN
type *, 'Please hit RETURN to try another selection'
accept 82905,answer
82905 format (A)
GO TO 82810
END IF

C Program will branch here only if RSE has been successful,

83000 TYPE 83005

83005 FORMAT (/' Select one of the following options:'
1 // ' 1 = Print all fields'
2 / ' 2 = Print only selected fields'
3 // ' Note: '
4 / ' Under option 2, - It is best to list'
5 ' only a few fields at one time;'
6 // ' As the total size of all selected fields'
7 ' approaches 130 characters'
8 / ' The report line will wrap around, making it'
9 ' difficult to read'/)

83100 ACCEPT 83105,CHOICE

83105 FORMAT (A)

C Input Error-Trap

IF ((CHOICE .NE. '1') .AND. (CHOICE .NE. '2')) THEN
type *, 'Wrong entry, please hit RETURN and try again'
accept 83205,answer
83205 format (A)
GO TO 83000
END IF

IF (CHOICE .EQ. '1') THEN
GO TO 84400
END IF

C Print only selected fields:
C Prompt user for fields to show on report

```
83300 TYPE 83305
83305 FORMAT (/' Type all the fields you wish to show on the report'
1          /' in the order in which you wish to list them;'
2          /' Seperate the fields by commas'/)
```

```
83400 ACCEPT 83405,PRTFLDS
83405 FORMAT (A)
```

C Choose between screen display and printed report

```
83500 TYPE 83505
83505 FORMAT (/' Do you want to display the report on the screen'
1          /' or print it to a temporary file for later use?'
2          /' Please respond with S or F:'/)
```

```
83600 ACCEPT 83605,ANSWER
83605 FORMAT (A)
```

C Input Error-Trap

```
1          IF ((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
            ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f')) THEN
            type *,'Wrong entry, please hit RETURN and try again'
            accept 83705,answer
83705      format (A)
            GO TO 83500
            END IF
```

```
IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
GO TO 84200
END IF
```

C This section for screen display only

```
83800 CALL DTR$COMMAND (DAB, 'FOR CURRENT PRINT !CMD;',
1          PRTFLDS)
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
```

C Check for possible datatrieve errors

```
1          IF ((DAB$SL_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
            (DAB$SL_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
            GO TO 90100
            END IF
```

```
83900 TYPE 83905
83905 FORMAT (' Do you now wish to print the same report?'
1          /' Please respond with Y or N:'
2          /' Then hit the RETURN key'/)
```

```
84000 ACCEPT 84005,ANSWER
84005 FORMAT (A)
```

C Input Error-Trap

```
IF (((ANSWER .NE. 'Y') .AND. (ANSWER .NE. 'y')) .AND.
```

```
1          ((ANSWER .NE. 'N') .AND. (ANSWER .NE. 'n')) THEN
type *, 'Wrong entry, please hit RETURN and try again'
84105      accept 84105,answer
          format (A)
          GO TO 83900
END IF
```

```
IF ((ANSWER .EQ. 'N') .OR. (ANSWER .EQ. 'n')) THEN
RETURN
END IF
```

C This section for Printed Report
C Pass the earlier RSE on to Datatrieve via DTR\$COMMAND

```
84200 CALL DTR$COMMAND (DAB, 'REPORT CURRENT ON NASAREP.TXT;')
```

C Check for possible datatrieve errors

```
IF (DAB$W_STATE .EQ. DTR$K_STL_MSG) THEN
GO TO 90000
END IF
```

C Prompt user for a Report Title

```
84210 TYPE 84215
84215 FORMAT (/// ' Enter the report title enclosed in quotation marks'
1          /' Separate lines with a slash "/"'
2          //' Example : "LIST OF FOREIGN ALLOYS WITH"/"DESIGNATION'
3          ' = 1090"///)
```

```
84220 READ 84225, LGTH, REPHEADER
84225 FORMAT (Q, A)
```

C Now Set the Report Heading Based on the entry

```
84230 IF (LGTH .NE. 0) THEN
CALL DTR$COMMAND (DAB, 'SET REPORT_NAME = !CMD;', REPHEADER)
END IF
```

C Check for Datatrieve Errors Again

```
IF (DAB$W_STATE .EQ. DTR$K_STL_MSG) THEN
GO TO 90000
END IF
```

C Set additional Print Parameters

```
84240 CALL DTR$COMMAND (DAB, 'SET COLUMNS_PAGE = 132')
```

C Check for possible datatrieve errors

```
IF (DAB$W_STATE .EQ. DTR$K_STL_MSG) THEN
GO TO 90000
END IF
```

C Pass the earlier print list to Datatrieve

```
84250 CALL DTR$COMMAND (DAB, 'PRINT !CMD;', PRTFLDS)
```

C Check for possible datatrieve errors

```
IF (DAB$W_STATE .EQ. DTR$K_STL_MSG) THEN
GO TO 90000
```


END IF

```

84260 CALL DTR$COMMAND (DAB, 'END REPORT;')
      CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
C Check for possible datatrieve errors
  IF (DAB$W_STATE .EQ. DTR$K_STL_MSG) THEN
    GO TO 90000

```

```

      END IF
84270 type 84275
84275 format (/' The report has been sucessfully generated'
1         /' into your directory as NASAREP.TXT'
2         //' You may browse it with EDT editor or'
3         /' print it with "PRINT NASAREP.TXT"'
4         //' Hit the RETURN key to continue'/)

```

```

84280 accept 84285,answer
84285 format (A)
      GO TO 82810

```

```

C*****
C
C Print All Fields - under Building your own reports
C
C*****

```

C Choose between screen display and printed report

```

84400 TYPE 84405
84405 FORMAT (/' Do you want to display the report on the screen'
1         /' or print it to a temporary file for later use?'
2         //' Please respond with S or F: '/')

```

```

84410 accept 84415,answer
84415 format (A)

```

C Input Error-Trap

```

1         IF (((ANSWER .NE. 'S') .AND. (ANSWER .NE. 's')) .AND.
              ((ANSWER .NE. 'F') .AND. (ANSWER .NE. 'f'))) THEN
      type *, 'Wrong entry, please hit RETURN and try again'
      accept 84425,answer
84425      format (A)
          GO TO 84400
      END IF

```

```

      IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
        WRITE (*,84435)
84435      FORMAT (/' Your report will be stored in a temporary'
1             ' data file e.g. PRTEMP.DAT which'
2             /' you may browse with EDT or print on your'
3             ' local printer i.e. PRINT PRTEMP.DAT'
4             //' Choose and enter a name for your'
5             ' temporary print file, e.g. PRTEMP'/)

```

```

84440      ACCEPT 84445,FILENAME
84445      FORMAT (A)
          PRT = 3
          OPEN (3,FILE=FILENAME,STATUS='NEW')
      ELSE

```

```

      PRT = 5
    END IF

```

C Step 1:

```

84500 CALL DTR$COMMAND (DAB, 'PORT2 = CURRENT;')
      UNITY = 'Wt %'

```

C Check for possible datatrieve errors

```

      IF ((DAB$SL_CONDITION .NE. %LOC(DTR$_SUCCESS)) .OR.
1      (DAB$SL_CONDITION .EQ. %LOC(DTR$_ERROR))) THEN
      CALL DTR$DTR (DAB, DTR$_OPT_CMD)
      type *, 'DTR ERROR'
      type *, 'Just hit RTN to continue'
      accept 84515, answer
84515  format (A)
      RETURN
    END IF

```

C Step 2:

C The above command causes the DTR\$K_STL_PGET stall point
 C While at this DTR stall point, we will continue to use
 C DTR\$GET_PORT to copy one record at a time from the port
 C into our Fortran record buffer FULLREC

C IF NEXT CONDITION IS TRUE THEN RESET DOMAIN B4 RETURN

```

84520 IF (DAB$W_STATE .NE. DTR$K_STL_PGET) THEN
      type *, ' '
      type *, '- no more records to print'
      type *, 'Just hit RETURN to go back to the previous menu'
      accept 84535, answer
84535  format (A)
      CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
      IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB, DTR$_OPT_CMD)
        OPENPORT = .FALSE.
      END IF
      RETURN
    END IF

```

```

84540 CALL DTR$GET_PORT (DAB, %REF(FULLREC))

```

```

      CNTRY = CONTRY
      CALL jsCNTRY (cntry, icntry, Xcntry)

```

C Print the detail line from the record buffer

```

84600 CALL LIB$ERASE PAGE (1,1)
84610 WRITE (PRT, 84615)
84615 FORMAT (T20, 'NASA ALLOY DATABASE FULL REPORT'
1      /T20, '-----')
      WRITE (PRT, 84625) UNS, FADB, DESG, TEMPR, FORMNUM, ALTYP
84625 FORMAT (/' UNS No. = ', A6, 31X, ' FADB Ref. No. = ', A7,
1      //' Designation = ', A30, 3X, ' Temper = ', A15,
2      //' Form = ', A30, 2X, ' Alloy type = ', A20)
      WRITE (PRT, 84635) STDNUM, EQUIV, XCNTY, ORIGIN
84635 FORMAT (/' Standard No. = ', A10, 11X,

```

```

1      ' U.S. Equivalent = ',A25,
2      //' Country of Origin = ',A15,2X,
3      ' Originating Organization = ',A10)
WRITE (PRT,84645) SPECS1,SPECS2,SPECS3,SPECS4
84645 FORMAT (//' Specifications: '2A30/17X,2A30)
WRITE (PRT,84655) UNITY,MINAL,MAXAL,MINSI,MAXSI,
A      MINFE,MAXFE,MINCU,MAXCU,MINMN,MAXMN,
B      MINMG,MAXMG,MINV,MAXV,MINTI,MAXTI,
C      MINPB,MAXPB,MINSN,MAXSN,
D      OTHER1,MINO1,MAXO1,OTHER2,MINO2,MAXO2
84655 FORMAT (//' Composition Data:',12X,'Units = ',A4
1      //'
2      //' Element',12X,'Minimum Maximum'
3      ' Element',10X,'Minimum Maximum'
2      //' -----',12X,'-----'
3      ' -----',10X,'-----'

4      //' Al (Aluminum) ',6X,A7,6X,A7,3X,
5      ' Si (Silicon) ',5X,A7,4X,A7
6      //' Fe (Iron) ',6X,A7,6X,A7,3X,
7      ' Cu (Copper) ',5X,A7,4X,A7
8      //' Mn (Manganese) ',6X,A7,6X,A7,3X,
9      ' Mg (Magnesium) ',5X,A7,4X,A7
A      //' Zn (Zinc) ',6X,A7,6X,A7,3X,
B      ' V (Vanadium) ',5X,A7,4X,A7
C      //' Ti (Titanium) ',6X,A7,6X,A7,3X,
D      ' Zr (Zirconium) ',5X,A7,4X,A7
E      //' Cr (Cromium) ',6X,A7,6X,A7,3X,
F      ' Ni (Nickel) ',5X,A7,4X,A7
G      //' Pb (Lead) ',6X,A7,6X,A7,3X,
H      ' Sn (Tin) ',5X,A7,4X,A7

I      //' ',A10, ' ',6X,A7,6X,A7,3X,
J      ' ',A10, ' ',5X,A7,4X,A7/)

```

```

WRITE (PRT,84665) MINYLD,MAXYLD,TYPYLD,YLUNIT,
A      MINTNS,MAXTNS,TYPTNS,TNSUNIT,SCCRTG,
B      REFR1,REFR2,REFR3,ALNOTES
84665 FORMAT (//' Property',11X,'Minimum Maximum',4X,
1      ' Typical Units'
2      //' -----',11X,'-----',4X,
3      ' -----'
4      //' Yield Strength ',3(3X,A3,4X),A6
5      //' Tensile Strength ',3(3X,A3,4X),A6
6      //' SCC Rating ',3X,A4
7      //' Data References ',3(2X,A3,2X),
8      //' Notes: ',A60/)

```

```

C The remaining options are for Screen Reports only
C So if printing reports just go back from here
IF ((ANSWER .EQ. 'F') .OR. (ANSWER .EQ. 'f')) THEN
GO TO 84520
END IF

```

```

84670 WRITE (*,84675)
84675 FORMAT (//' You may continue the report or return to'
1      ' the Main Menu from this point'
2      ' Select one of the following: '
3      ' C = Continue; M = Return to the Main Menu//)

```

```

84680 ACCEPT 84685,ANSWER
84685 FORMAT (A)

```

C Input Error-Trap

```

1      IF (((ANSWER .NE. 'M') .AND. (ANSWER .NE. 'm')) .AND.
        ((ANSWER .NE. 'C') .AND. (ANSWER .NE. 'c'))) THEN
        type *, 'Wrong entry, please hit RETURN and try again'
        accept 84695,answer
84695   format (A)
        GO TO 84670
        END IF
        IF ((ANSWER .EQ. 'M') .OR. (ANSWER .EQ. 'm')) THEN
        CALL DTR$COMMAND (DAB, 'RELEASE ALL;')
        IF (OPENPORT) THEN
        CALL DTR$COMMAND (DAB, 'FINISH PORT2;')
        CALL DTR$DTR (DAB,DTR$M_OPT_CMD)
        OPENPORT = .FALSE.
        END IF
        RETURN
    END IF

```

84700 TYPE 84705

```

84705 FORMAT (/ ' Do you wish to see the same record again?:'
1      ' Respond with Y or N'
2      /' When the display begins'
3      ' you may hold the screen at any point'
4      /' Type CTRL-S to hold screen, and CTRL-Q to continue'/)

```

ACCEPT 84715,ANSWER

84715 FORMAT (A)

C Input Error-Trap

```

1      IF (((ANSWER .NE. 'Y') .AND. (ANSWER .NE. 'y')) .AND.
        ((ANSWER .NE. 'N') .AND. (ANSWER .NE. 'n'))) THEN
        type *, 'Wrong entry, please hit RETURN and try again'
        accept 84725,answer
84725   format (A)
        GO TO 84700
        END IF
        IF ((ANSWER .EQ. 'Y') .OR. (ANSWER .EQ. 'y')) THEN
        GO TO 84600
        ELSE
        GO TO 84520
        END IF

```

C Below is the general error message handling routine

C Call the Terminal Server to handle messages at the end of the report

90000 CALL DTR\$DTR (DAB, DTR\$M_OPT_CMD)

C If there was any error then prompt user to retry again

```

1      IF ((DAB$LC_CONDITION .EQ. %LOC(DTR$_SUCCESS)) .AND.
        (DAB$LC_CONDITION .NE. %LOC(DTR$_ERROR))) THEN
        RETURN
    END IF

```

90100 TYPE 90105

90105 FORMAT (' There was a Datatrieve error,')

```

1      ' Do you wish to try again?'
2      //' Please respond with Y or N'/)
        accept 90205,answer

```

90205 format (A)

C Input Error-Trap

```

1      IF (((ANSWER .NE. 'Y') .AND. (ANSWER .NE. 'y')) .AND.
        ((ANSWER .NE. 'N') .AND. (ANSWER .NE. 'n'))) THEN
        type *, 'Wrong entry, please hit RETURN and try again'
        accept 90305,answer
90305   format (A)

```

```

          GO TO 90100
        END IF

        IF ((ANSWER .EQ. 'Y') .OR. (ANSWER .EQ. 'y')) THEN
          GO TO 100
        END IF

90999 RETURN
      END

```

```

C*****
C
C          SUBROUTINE PRINTFEW
C
C Module Name:          SBPRINTFEW.FOR
C Date Written:         August XX, 1985
C Designer/Programmer: Joseph K. Amanfu, Fisk University, Nashville
C Modified by J. Springer 6/9/86
C                       7/7/89
C*****

```

```

          SUBROUTINE JSPTFEW (prt)

          INTEGER      RECPRT
          INTEGER      IPAGE
          INTEGER      PRT
          CHARACTER*15 XCNTY

C FULLREC is the space defined to receive the record from
C the Datatrive buffer
      INCLUDE '[NASA3.JSEXREC]FULLREC5.INC'

      COMMON/DATAREC/FULLREC
      COMMON/COUNTRY/XCNTY
      COMMON/KOUNTS/IPAGE,RECPRT
      RECPRT = RECPRT+1
      IF (RECPRT .GT. 50) THEN
        RECPRT = 1
        IPAGE = IPAGE+1
        CALL LIB$ERASE_PAGE (1,1)
        WRITE (PRT,205) IPAGE, Xcntry
205 FORMAT ('1NASA ALLOY DATABASE ABBREVIATED REPORT',
1         '      Page ',I4,
2         '/ List of Alloys from ',A15
3         '// Rec. No. Designation',20X,'US Equivalent',12X,
4         ' Temper',10X,'Country',9X,'Form'/)
      END IF
      WRITE (PRT,1005) FADB,DESG,EQUIV,TEMPR,XCNTY,FORMNUM
1005 FORMAT (' ',A7,2X,A30,1X,A25,1X,A15,1X,A15,1X,A30)
      RETURN
      END

```

```

C   Declares FULLREC buffer and variable equivalences for database
C   subroutines using this method to transfer data between subroutines
C   or between Datatrive and a subroutine.
C
C           J. Springer - 6/11/86
C   Revised to match extended record with addition elements and altered
C   miscellaneous field length.
C
C   Revised to allow for increased tensile, yield, and SCC field widths.
C

```

C Revised 9/25/87 to add US_TEMP_EQV, IRR_DESG, and READY fields.

C
C
C

Revised July 89 to match NASAREC5

C
C
C
C

CHARACTER*1 FULLREC (836)
(Note that the size of fullrec is 3 characters larger
than the Datatrieve record size since the 8 character
date field is converted to an 11 character string when
output.)

- CHARACTER*30 DESG
- CHARACTER*7 FADB
- CHARACTER*6 UNS
- CHARACTER*30 FORMNUM
- CHARACTER*15 TEMPR
- CHARACTER*5 ALTP
- character*20 ALCAT
- CHARACTER*10 STATUS
- CHARACTER*10 ORIGIN
- CHARACTER*2 CONTRY
- CHARACTER*20 EQUIV
- CHARACTER*15 EQVTEMP
- character*2 EQVRATE
- CHARACTER*6 IRRDESG
- character*20 ALTDESIG
- CHARACTER*20 SPECS1
- CHARACTER*20 SPECS2
- CHARACTER*20 SPECS3
- CHARACTER*20 SPECS4
- CHARACTER*20 SPECS5
- CHARACTER*1 UNITS
- CHARACTER*7 MINAL
- CHARACTER*7 MAXAL
- CHARACTER*7 MINSI
- CHARACTER*7 MAXSI
- CHARACTER*7 MINFE
- CHARACTER*7 MAXFE
- CHARACTER*7 MINCU
- CHARACTER*7 MAXCU
- CHARACTER*7 MINMN
- CHARACTER*7 MAXMN
- CHARACTER*7 MINMG
- CHARACTER*7 MAXMG
- CHARACTER*7 MINZN
- CHARACTER*7 MAXZN
- CHARACTER*7 MINV
- CHARACTER*7 MAXV
- CHARACTER*7 MINTI
- CHARACTER*7 MAXTI
- CHARACTER*7 MINZR
- CHARACTER*7 MAXZR
- CHARACTER*7 MINCR
- CHARACTER*7 MAXCR
- CHARACTER*7 MINNI
- CHARACTER*7 MAXNI
- CHARACTER*7 MINPB
- CHARACTER*7 MAXPB
- CHARACTER*7 MINSN
- CHARACTER*7 MAXSN
- CHARACTER*7 MINC
- CHARACTER*7 MAXC
- CHARACTER*7 MINCO

CHARACTER*7 MAXCO
CHARACTER*7 MINMO
CHARACTER*7 MAXMO
CHARACTER*7 MINW
CHARACTER*7 MAXW
CHARACTER*7 MINP
CHARACTER*7 MAXP
CHARACTER*7 MINS
CHARACTER*7 MAXS
CHARACTER*7 MINB
CHARACTER*7 MAXB
CHARACTER*7 MINBE
CHARACTER*7 MAXBE
CHARACTER*7 MINGA
CHARACTER*7 MAXGA
CHARACTER*10 OTHER1
CHARACTER*7 MINO1
CHARACTER*7 MAXO1
CHARACTER*10 OTHER2
CHARACTER*7 MINO2
CHARACTER*7 MAXO2
CHARACTER*10 OTHER3
CHARACTER*7 MINO3
CHARACTER*7 MAXO3
CHARACTER*4 MINYLD
CHARACTER*4 MAXYLD
CHARACTER*4 TYPYLD
CHARACTER*6 YLUNIT
CHARACTER*4 MINTNS
CHARACTER*4 MAXTNS
CHARACTER*4 TYPTNS
CHARACTER*6 TNUNIT
character*2 ELONG
character*6 ELTEST
character*3 MINHARD
character*3 MAXHARD
character*3 TYPHARD
character*4 HARDUNIT
CHARACTER*5 SCCRTG
CHARACTER*3 EQVREF
CHARACTER*3 REFR1
CHARACTER*3 REFR2
CHARACTER*60 ALNOTES
CHARACTER*1 READY
character*11 UPDATE
EQUIVALENCE (FULLREC(1),DESG)
EQUIVALENCE (FULLREC(31),FADB)
EQUIVALENCE (FULLREC(38),UNS)
EQUIVALENCE (FULLREC(44),FORMNUM)
EQUIVALENCE (FULLREC(74),TEMPR)
EQUIVALENCE (FULLREC(89),ALTYP)
equivalence (fullrec(94),ALCAT)
EQUIVALENCE (FULLREC(114),STATUS)
EQUIVALENCE (FULLREC(124),ORIGIN)
EQUIVALENCE (FULLREC(134),CONTRY)
EQUIVALENCE (FULLREC(136),EQUIV)
EQUIVALENCE (FULLREC(156),EQVTEMP)
EQUIVALENCE (FULLREC(171),EQVRATE)
EQUIVALENCE (FULLREC(173),IRRDESG)
EQUIVALENCE (FULLREC(179),ALTDDESIG)
EQUIVALENCE (FULLREC(199),SPECS1)
EQUIVALENCE (FULLREC(219),SPECS2)

EQUIVALENCE (FULLREC(239), SPECS3)
EQUIVALENCE (FULLREC(259), SPECS4)
EQUIVALENCE (FULLREC(279), SPECS5)
EQUIVALENCE (FULLREC(299), UNITS)
EQUIVALENCE (FULLREC(300), MINAL)
EQUIVALENCE (FULLREC(307), MAXAL)
EQUIVALENCE (FULLREC(314), MINSI)
EQUIVALENCE (FULLREC(321), MAXSI)
EQUIVALENCE (FULLREC(328), MINFE)
EQUIVALENCE (FULLREC(335), MAXFE)
EQUIVALENCE (FULLREC(342), MINCU)
EQUIVALENCE (FULLREC(349), MAXCU)
EQUIVALENCE (FULLREC(356), MINMN)
EQUIVALENCE (FULLREC(363), MAXMN)
EQUIVALENCE (FULLREC(370), MINMG)
EQUIVALENCE (FULLREC(377), MAXMG)
EQUIVALENCE (FULLREC(384), MINZN)
EQUIVALENCE (FULLREC(391), MAXZN)
EQUIVALENCE (FULLREC(398), MINV)
EQUIVALENCE (FULLREC(405), MAXV)
EQUIVALENCE (FULLREC(412), MINTI)
EQUIVALENCE (FULLREC(419), MAXTI)
EQUIVALENCE (FULLREC(426), MINZR)
EQUIVALENCE (FULLREC(433), MAXZR)
EQUIVALENCE (FULLREC(440), MINCR)
EQUIVALENCE (FULLREC(447), MAXCR)
EQUIVALENCE (FULLREC(454), MINNI)
EQUIVALENCE (FULLREC(461), MAXNI)
EQUIVALENCE (FULLREC(468), MINPB)
EQUIVALENCE (FULLREC(475), MAXPB)
EQUIVALENCE (FULLREC(482), MINSN)
EQUIVALENCE (FULLREC(489), MAXSN)
EQUIVALENCE (FULLREC(496), MINC)
EQUIVALENCE (FULLREC(503), MAXC)
EQUIVALENCE (FULLREC(510), MINCO)
EQUIVALENCE (FULLREC(517), MAXCO)
EQUIVALENCE (FULLREC(524), MINMO)
EQUIVALENCE (FULLREC(531), MAXMO)
EQUIVALENCE (FULLREC(538), MINW)
EQUIVALENCE (FULLREC(545), MAXW)
EQUIVALENCE (FULLREC(552), MINP)
EQUIVALENCE (FULLREC(559), MAXP)
EQUIVALENCE (FULLREC(566), MINS)
EQUIVALENCE (FULLREC(573), MAXS)
EQUIVALENCE (FULLREC(580), MINB)
EQUIVALENCE (FULLREC(587), MAXB)
EQUIVALENCE (FULLREC(594), MINBE)
EQUIVALENCE (FULLREC(601), MAXBE)
EQUIVALENCE (FULLREC(608), MINGA)
EQUIVALENCE (FULLREC(615), MAXGA)
EQUIVALENCE (FULLREC(622), OTHER1)
EQUIVALENCE (FULLREC(632), MINO1)
EQUIVALENCE (FULLREC(639), MAXO1)
EQUIVALENCE (FULLREC(646), OTHER2)
EQUIVALENCE (FULLREC(656), MINO2)
EQUIVALENCE (FULLREC(663), MAXO2)
EQUIVALENCE (FULLREC(670), OTHER3)
EQUIVALENCE (FULLREC(680), MINO3)
EQUIVALENCE (FULLREC(687), MAXO3)
EQUIVALENCE (FULLREC(694), MINYLD)
EQUIVALENCE (FULLREC(698), MAXYLD)
EQUIVALENCE (FULLREC(702), TYPYLD)

EQUIVALENCE (FULLREC(706),YLUNIT)
 EQUIVALENCE (FULLREC(712),MINTNS)
 EQUIVALENCE (FULLREC(716),MAXTNS)
 EQUIVALENCE (FULLREC(720),TYPTNS)
 EQUIVALENCE (FULLREC(724),TNUNIT)
 EQUIVALENCE (FULLREC(730),ELONG)
 EQUIVALENCE (FULLREC(732),ELTEST)
 EQUIVALENCE (FULLREC(738),MINHARD)
 EQUIVALENCE (FULLREC(741),MAXHARD)
 EQUIVALENCE (FULLREC(744),TYPHARD)
 EQUIVALENCE (FULLREC(747),HARDUNIT)
 EQUIVALENCE (FULLREC(751),SCCRTG)
 EQUIVALENCE (FULLREC(756),EQVREF)
 EQUIVALENCE (FULLREC(759),REFR1)
 EQUIVALENCE (FULLREC(762),REFR2)
 EQUIVALENCE (FULLREC(765),ALNOTES)
 EQUIVALENCE (FULLREC(825),READY)
 EQUIVALENCE (FULLREC(826),UPDATE)

C Declaration of PORT2 using PIC X(7) for composition
 C limits and record structure for all character fields
 C in the NASADOM4 domain. This new domain adds the
 C fields EQV_TEMP for equivalent US temper values,
 C IRRDESIG for the AA Int. Registry Record numbers,
 C READY, a one character field to indicate whether
 C the record is valid for shipment to NASA, and
 C composition fields for Be and Ga.

C JS - 9/30/87

C =====
 C Changed temper fields to condition fields
 C JS - 5/4/88

C =====
 C Revised to match NASAFIL_E_REC5, which includes
 C new fields for alloy category, alternate designation,
 C etc. JS - July 89

C CALL DTR\$COMMAND (DAB, 'DECLARE PORT PORT2 USING '
 C CALL DTR\$COMMAND (DAB, '01 TEMPREC. '
 C CALL DTR\$COMMAND (DAB, '05 DESIG PIC X(30). '
 C CALL DTR\$COMMAND (DAB, '05 FADB NO PIC X(7). '
 C CALL DTR\$COMMAND (DAB, '05 UNS NO PIC X(6). '
 C CALL DTR\$COMMAND (DAB, '05 FORM PIC X(30). '
 C CALL DTR\$COMMAND (DAB, '05 CONDITION PIC X(15). '
 C CALL DTR\$COMMAND (DAB, '05 ALTYPE PIC X(5). '
 C CALL DTR\$COMMAND (DAB, '05 ALCAT PIC X(20). '
 C CALL DTR\$COMMAND (DAB, '05 STATUS PIC X(10). '
 C CALL DTR\$COMMAND (DAB, '05 ORIGORG PIC X(10). '
 C CALL DTR\$COMMAND (DAB, '05 COUNTRY PIC X(2). '
 C CALL DTR\$COMMAND (DAB, '05 US EQV PIC X(20). '
 C CALL DTR\$COMMAND (DAB, '05 EQVCOND PIC X(15). '
 C CALL DTR\$COMMAND (DAB, '05 EQVRATE PIC X(2). '
 C CALL DTR\$COMMAND (DAB, '05 IRR DESIG PIC X(6). '
 C CALL DTR\$COMMAND (DAB, '05 ALTDESIG PIC X(20). '
 C CALL DTR\$COMMAND (DAB, '05 SPEC1 PIC X(20). '
 C CALL DTR\$COMMAND (DAB, '05 SPEC2 PIC X(20). '
 C CALL DTR\$COMMAND (DAB, '05 SPEC3 PIC X(20). '

CALL DTR\$COMMAND (DAB, '05 SPEC4 PIC X(20). ')
CALL DTR\$COMMAND (DAB, '05 SPEC5 PIC X(20). ')
CALL DTR\$COMMAND (DAB, '05 COMPO. ')
CALL DTR\$COMMAND (DAB, '10 WT ATNO PIC X(1). ')
CALL DTR\$COMMAND (DAB, '10 MIN-AL PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-AL PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MIN-SI PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-SI PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-FE PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-FE PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-CU PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-CU PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-MN PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-MN PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-MG PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-MG PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-ZN PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-ZN PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-V PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-V PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-TI PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-TI PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-ZR PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-ZR PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-CR PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-CR PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-NI PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-NI PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-PB PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-PB PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-SN PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-SN PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-C PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-C PIC x(7). ')

CALL DTR\$COMMAND (DAB, '10 MIN-CO PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-CO PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MIN-MO PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-MO PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MIN-W PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-W PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MIN-P PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-P PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MIN-S PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-S PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MIN-B PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-B PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MIN-BE PIC x(7). ')
CALL DTR\$COMMAND (DAB, '10 MAX-BE PIC x(7). ')

```
CALL DTR$COMMAND (DAB, '10 MIN-GA PIC x(7). ')
CALL DTR$COMMAND (DAB, '10 MAX-GA PIC x(7). ')
CALL DTR$COMMAND (DAB, '10 OTHER1 PIC X(10). ')
CALL DTR$COMMAND (DAB, '10 MIN-O1 PIC x(7). ')
CALL DTR$COMMAND (DAB, '10 MAX-O1 PIC x(7). ')
CALL DTR$COMMAND (DAB, '10 OTHER2 PIC X(10). ')
CALL DTR$COMMAND (DAB, '10 MIN-O2 PIC x(7). ')
CALL DTR$COMMAND (DAB, '10 MAX-O2 PIC x(7). ')
CALL DTR$COMMAND (DAB, '10 OTHER3 PIC X(10). ')
CALL DTR$COMMAND (DAB, '10 MIN-O3 PIC x(7). ')
CALL DTR$COMMAND (DAB, '10 MAX-O3 PIC x(7). ')
CALL DTR$COMMAND (DAB, '05 MIN_YLD PIC X(4). ')
CALL DTR$COMMAND (DAB, '05 MAX_YLD PIC X(4). ')
CALL DTR$COMMAND (DAB, '05 TYP_YLD PIC X(4). ')
CALL DTR$COMMAND (DAB, '05 YL_UNIT PIC X(6). ')
CALL DTR$COMMAND (DAB, '05 MIN_TNS PIC X(4). ')
CALL DTR$COMMAND (DAB, '05 MAX_TNS PIC X(4). ')
CALL DTR$COMMAND (DAB, '05 TYP_TNS PIC X(4). ')
CALL DTR$COMMAND (DAB, '05 TN_UNIT PIC X(6). ')
CALL DTR$COMMAND (DAB, '05 ELONGATION PIC X(2). ')
CALL DTR$COMMAND (DAB, '05 ELTEST PIC X(6). ')
CALL DTR$COMMAND (DAB, '05 MIN_HARD PIC X(3). ')
CALL DTR$COMMAND (DAB, '05 MAX_HARD PIC X(3). ')
CALL DTR$COMMAND (DAB, '05 TYP_HARD PIC X(3). ')
CALL DTR$COMMAND (DAB, '05 HARD_UNIT PIC X(4). ')
CALL DTR$COMMAND (DAB, '05 SCC_RTG PIC X(5). ')
CALL DTR$COMMAND (DAB, '05 DATA REFERENCES. ')
CALL DTR$COMMAND (DAB, '10 EQVREF PIC X(3). ')
CALL DTR$COMMAND (DAB, '10 REF1 PIC X(3). ')
CALL DTR$COMMAND (DAB, '10 REF2 PIC X(3). ')
CALL DTR$COMMAND (DAB, '05 NOTES PIC X(60). ')
CALL DTR$COMMAND (DAB, '05 READY CODE PIC X(1). ')
CALL DTR$COMMAND (DAB, '05 UPDATE PIC X(11).; ')
CALL DTR$DTR (DAB, DTR$M_OPT_CMD)
```

```
SUBROUTINE SCRONENTR
INCLUDE 'DATABUFF'
INCLUDE 'IODRVCOM'
INCLUDE 'CONTROLY'
REAL*4 Z
INTEGER*2 S,PAGE_NUM,J,BLINK,INVERSE,
2 ERR_PAGE,ERR_I,LONG
INTEGER*4 STAT,KZ
CHARACTER*1 ENTER,CHARACTER,BAK,CR,ESC,BEL,DELIMIT,A
CHARACTER*2 Keypad,Numeric
CHARACTER*8 G,H,IX
CHARACTER*11 SCRLBL
CHARACTER*20 X,BLANKS
```

```
DIMENSION G(10),IX(10)
```

```
!
      Define Test Characters
PARAMETER (ENTER=CHAR(255), ! Enter Key In Keypad Mode
2       BAK=CHAR(8),      ! Backspace
2       CR=CHAR(13),     ! Carriage Return
2       ESC=CHAR(27),    ! Escape
2       BEL=CHAR(7),     ! Bell
2       DELIMIT=CHAR(127) ) ! Largest Allowable Character
!       Key Board Control
PARAMETER (Keypad=CHAR(27)//CHAR(61), ! Sets Keypad Mode
2       Numeric=CHAR(27)//CHAR(62) ) ! Returns To Numeric
```

```
!
      Display attributes
PARAMETER (BLINK=4, ! Blink
2       INVERSE=2) ! Inverse Video
```

```
DATA      SCRLBL /'Page x Of x'/
```

```
!
      Formats For Numeric Editing
DATA      G(1) /'(BNF1.0)'/,
2       G(2) /'(BNF2.0)'/,
2       G(3) /'(BNF3.0)'/,
2       G(4) /'(BNF4.0)'/,
2       G(5) /'(BNF5.0)'/,
2       G(6) /'(BNF6.0)'/,
2       G(7) /'(BNF7.0)'/,
2       G(8) /'(BNF8.0)'/
```

```
DATA IX(1) /'(BNI1)'/,
2     IX(2) /'(BNI2)'/,
2     IX(3) /'(BNI3)'/,
2     IX(4) /'(BNI4)'/,
2     IX(5) /'(BNI5)'/,
2     IX(6) /'(BNI6)'/,
2     IX(7) /'(BNI7)'/
```

```

DATA BLANKS /'
'/

SCRLBL(11:11)=CHAR(MAX_PAGE+47)
STAT=LIB$PUT_LINE(Keypad) ! Put Terminal In Keypad Mode
!
    Unpack Input Buffer
DO 100 I=1,MAX_PAGE
DO 100 J=1,LIMITS(I,3)
K=VAR(I,J)
100 LABEL(K)=FULLREC(START(K):START(K)+LEN(K)-1)

ERR_PAGE=2
ERR_I=0
CHARACTER=' '
!
    Display Header--Page One
STAT=LIB$ERASE_PAGE(1,1)
STAT=LIB$PUT_SCREEN(Flag,1,1,2)
DO 120 I=LIMITS(1,1),LIMITS(1,2)
IF (ATTRIB(I).EQ.INVERSE) THEN
    STAT=LIB$PUT_SCREEN(LABEL(I)(1:LEN(I)),ROW(I),COL(I),2)
ELSE IF (ATTRIB(I).EQ.BLINK) THEN
    STAT=LIB$PUT_SCREEN(LABEL(I)(1:LEN(I)),ROW(I),COL(I),6)
ELSE
    STAT=LIB$PUT_SCREEN(LABEL(I)(1:LEN(I)),ROW(I),COL(I),0)
END IF
120 CONTINUE

! Main Loop-Begin On Page 2 And Cycle Through Until ENTER Key
140 PAGE_NUM=ERR_PAGE
DO 500 WHILE (CHARACTER.NE.ENTER)
150 STAT=LIB$ERASE_PAGE(HEADLINE,1)

!
    Display Prompts And Labels, This Page

SCRLBL(6:6)=CHAR(PAGE_NUM+47)
STAT=LIB$PUT_SCREEN(SCRLBL,2,1)

DO 200 I=LIMITS(PAGE_NUM,1),LIMITS(PAGE_NUM,2)
IF (ATTRIB(I).EQ.2) THEN
    STAT=LIB$PUT_SCREEN(LABEL(I)(1:LEN(I)),ROW(I),COL(I),2)
ELSE IF (ATTRIB(I).EQ.6) THEN
    STAT=LIB$PUT_SCREEN(LABEL(I)(1:LEN(I)),ROW(I),COL(I),6)
ELSE
    STAT=LIB$PUT_SCREEN(LABEL(I)(1:LEN(I)),ROW(I),COL(I),0)
END IF
200 CONTINUE

!
    Cycle Through Variables On Current Page
IF (LIMITS(PAGE_NUM,3).EQ.0) THEN
    GOTO 405
END IF
DO 400 I=1,LIMITS(PAGE_NUM,3)
IF (ERR_I.NE.0) THEN

```

```

        I=ERR_I
        ERR_I=0
    END IF
220  K=VAR(PAGE_NUM,I)

    !           Treat Current Variable Character By Character.

230  DO 300 S=0,LEN(K)-1

    !           Put Current Value Of Variable To Screen
    IF (ATTRIB(K).EQ.2) THEN
        STAT=LIB$PUT_SCREEN(LABEL(K)(1:LEN(K)),ROW(K),COL(K),2)
    ELSE IF (ATTRIB(K).EQ.6) THEN
        STAT=LIB$PUT_SCREEN(LABEL(K)(1:LEN(K)),ROW(K),COL(K),6)
    ELSE
        STAT=LIB$PUT_SCREEN(LABEL(K)(1:LEN(K)),ROW(K),COL(K),0)
    END IF
250  STAT=LIB$SET_CURSOR(ROW(K),COL(K)+S)
    CALL READER
        IF (CTRL) THEN
            ! Get Next Keystroke
            ! Exit On CTRL/Y
            GOTO 9000
        END IF
        CHARACTER=INPUT(1:1)
        J=IOSTAT_BLOCK(4)
        IF (CHARACTER.EQ.BAK) THEN
            ! Backspace
            CHARACTER=' '
            IF (S.GT.0) THEN
                S=S-1
            END IF
        ELSE IF (CHARACTER.EQ.CR) THEN
            ! Carriage Return-Next
            variable
            GOTO 310
        ELSE IF (CHARACTER.EQ.ESC) THEN
            ! Escape Sequences
            IF (INPUT(J:J).EQ.'C') THEN
                ! Right Arrow-Skip A Space
                IF (S.EQ.LEN(K)-1) THEN
                    S=0
                ELSE
                    S=S+1
                END IF
            GOTO 250
        ELSE IF (INPUT(J:J).EQ.'D') THEN
            ! Left Arrow-Backspace
            IF (S.EQ.0) THEN
                S=LEN(K)-1
            ELSE
                S=S-1
            END IF
            GOTO 250
        ELSE IF ((INPUT(J:J).GE.'p').AND.
                (INPUT(J:J).LE.'y')) THEN
            ! Convert Key Pad
            ! To Numeric
            CHARACTER=CHAR(ICHAR(INPUT(J:J))-64)
        ELSE IF (INPUT(J:J).EQ.'n') THEN
            CHARACTER='.'
        2

```

```

ELSE IF ((INPUT(J:J).EQ.'M').OR.
2      ((INPUT(J:J).GE.'P').AND.
2      (INPUT(J:J).LE.'S')) ) THEN
      GOTO 310
ELSE
      STAT=LIB$PUT_SCREEN(BEL)
      GOTO 250
END IF
END IF

```

! Test Character Format And Insert In Variable

```

IF ( ( (ALPHA(K).EQ.'N').AND.
2     (CHARACTER.GE.'0').AND.
2     (CHARACTER.LE.'9'))
2   .OR. ( (ALPHA(K).EQ.'N').AND.
2     (CHARACTER.EQ.'.'))
2   .OR. ((ALPHA(K).NE.'N').AND.
2     (CHARACTER.GE.' ').AND.(CHARACTER.LE.DELIMIT) )) THEN
      LABEL(K)(S+1:S+1)=CHARACTER
ELSE
      STAT=LIB$PUT_SCREEN(BEL)
      GOTO 250
END IF
300 END DO

```

! Edit Single Variable Here

```

IOS=0
310 J=LEN(K)
IF (ALPHA(K).EQ.'N') THEN    ! Is This Variable Numeric?
!        Zero Supress, Right Justify, Blank Fill Numerics
      READ(LABEL(K)(1:J),G(J),IOSTAT=IOS,ERR=390) Z
      IF (Z.EQ.0) THEN
          WRITE(LABEL(K),G(J+1),IOSTAT=IOS,ERR=390) Z
      ELSE
          H=G(J+1)
          IF (Z.LT.1.0) THEN
              S=J
          ELSE
              S=LOG10(Z)
              S=J-1-S
          END IF
          H(7:7)=CHAR(S+48)
          WRITE(LABEL(K),H,IOSTAT=IOS,ERR=390) Z
      END IF
      IF (LABEL(K)(J:J).EQ.'.') THEN
          X=BLANKS(1:J)
          X(2:J)=LABEL(K)(1:J-1)
          LABEL(K)(1:J)=X(1:J)
      END IF
ELSE IF (ALPHA(K).EQ.'I') THEN
      READ (LABEL(K)(1:J),IX(J),IOSTAT=IOS,ERR=390) KZ
      WRITE (LABEL(K),IX(J),IOSTAT=IOS,ERR=390 ) KZ

```

```

      Z=KZ
    END IF
    IF (ALPHA(K).NE.'A') THEN
      IF (MAX(K).NE.BLANKS(1:7)) THEN
        IF (Z.GT.XMAX(K)) THEN
          IOS=1
          GOTO 390                ! Exit If gt Than Max
        END IF
      END IF
      IF (MIN(K).NE.BLANKS(1:7)) THEN
        IF (Z.LT.XMIN(K)) THEN
          IOS=1
          GOTO 390                ! Exit If lt Than Min
        END IF
      END IF
    END IF
!
!       Check For TLU (Table Look Up) To Verify Coded Fields
    IF ( (TLU(K).NE.0).AND.(FILES_OPEN(TLU(K)-90)) ) THEN
      CALL TABLE_LOOK_UP(TLU(K),IOS,X,LONG,LABEL(K),LEN(K))
      STAT=LIB$PUT_SCREEN(X(1:LONG),ROW(K),COL(K)+LEN(K)+1)
    END IF
!
!       End Error Checking For This Field
!       Check To See If Errors Have Occured
390 IF (IOS.NE.0) THEN
      ATTRIB(K)=BLINK+INVERSE
    ELSE
      ATTRIB(K)=INVERSE
    END IF
!
!       Put Variable To Screen
    IF (ATTRIB(K).EQ.2) THEN
      STAT=LIB$PUT_SCREEN(LABEL(K)(1:LEN(K)),ROW(K),COL(K),2)
    ELSE IF (ATTRIB(K).EQ.6) THEN
      STAT=LIB$PUT_SCREEN(LABEL(K)(1:LEN(K)),ROW(K),COL(K),6)
    ELSE
      STAT=LIB$PUT_SCREEN(BEL)
    END IF
    STAT=LIB$PUT_SCREEN(LABEL(K)(1:LEN(K)),ROW(K),COL(K),0)
  END IF
  IF (IOS.NE.0) THEN
    GOTO 230
  END IF
!
!       Analyze Escape Sequences
    IF (CHARACTER.EQ.ESC) THEN
      J=IOSTAT_BLOCK(4)
      IF (INPUT(J:J).EQ.'R') THEN ! PF4-Previous Variable
        IF (I.EQ.1) THEN

```



```

I=LIMITS(PAGE_NUM,3)
ELSE
  I=I-1
END IF
GOTO 220
Variable ELSE IF (INPUT(J:J).EQ.'S') THEN ! PF3-Skip To Next
  IF (I.EQ.LIMITS(PAGE_NUM,3)) THEN
    I=1
  ELSE
    I=I+1
  END IF
  GOTO 220
ELSE IF (INPUT(J:J).EQ.'Q') THEN ! PF2-Next Page
  IF (PAGE_NUM.EQ.MAX_PAGE) THEN
    PAGE_NUM=2
  ELSE
    PAGE_NUM=PAGE_NUM+1
  END IF
  GOTO 410
ELSE IF (INPUT(J:J).EQ.'P') THEN ! PF1-Previous Page
  IF (PAGE_NUM.EQ.2) THEN
    PAGE_NUM=MAX_PAGE
  ELSE
    PAGE_NUM=PAGE_NUM-1
  END IF
  GOTO 410
ELSE IF (INPUT(J:J).EQ.'M') THEN ! Enter Key-Done
  CHARACTER=ENTER
  GOTO 500
END IF
END IF
400 END DO ! End Of Loop For All Variables, This Page
405 IF (PAGE_NUM.GE.MAX_PAGE) THEN
  PAGE_NUM=2
ELSE
  PAGE_NUM=PAGE_NUM+1
END IF
410 CONTINUE
500 END DO ! End Of Loop, All Pages
! Edit All Pages Here
CHARACTER=' ' ! Reset Control For Main Loop
!
! Compare Pairs Of Variables
DO 800 I=2,MAX_PAGE
DO 800 J=1,LIMITS(I,3)
K=VAR(I,J)
IF (RECNUM(K).NE.0) THEN
  IF (COMPR(K).EQ.'LT') THEN
    IF (LABEL(K).GE.LABEL(RECNUM(K))) THEN
      IOS=1

```

```
END IF
ELSE IF (COMPR(K).EQ.'LE') THEN
  IF (LABEL(K).GT.LABEL(RECNUM(K))) THEN
    IOS=1
  END IF
ELSE IF (COMPR(K).EQ.'GE') THEN
  IF (LABEL(K).LT.LABEL(RECNUM(K))) THEN
    IOS=1
  END IF
ELSE IF (COMPR(K).EQ.'GT') THEN
  IF (LABEL(K).LE.LABEL(RECNUM(K))) THEN
    IOS=1
  END IF
END IF
IF (IOS.EQ.1) THEN
  IOS=0
  ERR_PAGE=I
  ERR_I=J
  STAT=LIB$PUT_SCREEN(BELL)
  ATTRIB(K)=BLINK+INVERSE
  GOTO 140
ELSE
  ATTRIB(K)=INVERSE
END IF
END IF
800 CONTINUE
```

```
! Reconstruct Data Buffer--FULLREC In /databuff/
IF (CTRL) THEN
  GOTO 9000
ELSE
  DO 1000 I=1,MAX_PAGE
  DO 1000 J=1,LIMITS(I,3)
  K=VAR(I,J)
1000 FULLREC(START(K):START(K)+LEN(K)-1)=LABEL(K)
END IF
```

```
! Exit Subroutine
9000 Succ=NORMAL
STAT=LIB$PUT_LINE(Numeric) ! Put Terminal In Numeric Mode
DO 9100 I=1,MAX_PAGE
DO 9100 J=1,LIMITS(I,3)
K=VAR(I,J)
9100 ATTRIB(K)=INVERSE
IOS=0

RETURN
END
```

C Include file CONTROLY.FOR

C Code to deal with control-Y break

```
LOGICAL*4 CTRL_Y
INTEGER*4 CTRL_Y_MASK,OLD_MASK
COMMON /controly/ CTRL_Y,CTRL_Y_MASK,OLD_MASK
```

C Include file for subroutine CTRL_Y_AST

C

```
SUBROUTINE CTRL_Y_AST
```

```
INCLUDE 'CONTROL_Y'
CTRL_Y=.TRUE.
RETURN
END
```

C Include file for subroutine INIT_IODRIVER

```
SUBROUTINE INIT_IODRIVER(FILESPEC)
```

```
INCLUDE 'IODRVCOM'
```

```
INCLUDE '($IODEF)'
```

```
IF (CODE.EQ.0) THEN
```

```
CODE=IO$ READVBLK      ! Read Logical Block
```

```
2 .OR. IO$M_NOECHO     ! Do Not Echo
```

```
2 .OR. IO$M_TRMNOECHO ! Do Not Echo Terminators
```

```
2 .OR. IO$M_ESCAPE    ! Allow All ASCII Escape Sequences
```

```
! 2 .OR. IO$M_CVTLOW   ! Convert To All Upper Case
```

```
! 2 .OR. IO$M_NOFILTER ! No Screen Editing
```

```
P_FOUR='
```

```
DO 100 I=1,16
```

```
P_FOUR(I:I)=CHAR(255)
```

```
100 CONTINUE
```

```
END IF
```

```
STATUS=SYS$ASSIGN('SYS$INPUT',IN_CHAN, , )
```

```
IF(STATUS.NE.SS$_NORMAL) CALL LIB$SIGNAL(%VAL(STATUS))
```

```
RETURN
```

```
END
```

```
SUBROUTINE READER (CHAR_OUT)
```

```
IMPLICIT INTEGER*4 (S)
```

```
INCLUDE '($IODEF)'
```

```
INCLUDE 'IODRVCOM'
```

```
INTEGER*4 IN_BUF_SIZE
```

```
PARAMETER (IN_BUF_SIZE=10)
```

```
STATUS=SYS$QIOW(,
```

```
2 %VAL(IN_CHAN),
```

```
2 %VAL(CODE),
```

```

2          IOSB,
2          ',
2          %REF(INPUT),
2          %VAL(IN_BUF_SIZE),
2          ',
2          %DESCR(P_FOUR),
2          ',)

```

```

IF ( STATUS.NE. 1) CALL LIB$SIGNAL(%VAL(STATUS))
IF ( IOSB.NE. 1) CALL LIB$SIGNAL(%VAL(IOSB))
RETURN
END

```

```

SUBROUTINE Q_AST_CTRLY

```

```

EXTERNAL CTRLY_AST
INTEGER*4 STATUS4, SYS$ASSIGN, LIB$DISABLE, SYS$QIOW
INCLUDE 'IODRVCOM'
INCLUDE '($IODEF)'
INCLUDE 'CONTROLY'

```

```

IF (CODE_AST.EQ.0) THEN
    CODE_AST=IOS_SETMODE.OR.IOSM_CTRLYAST
    CTRLY_MASK='02000000'X
END IF

```

```

! Get A Channel For CTRL/Y Interrupt

```

```

STATUS4=SYS$ASSIGN('SYS$INPUT', IN_CHAN_AST, , )
IF(STATUS4.NE.1) CALL LIB$SIGNAL(%VAL(STATUS4))

```

```

! Disable CTRL/Y Interrupts At DCL Level

```

```

STATUS4=LIB$DISABLE_CTRL(CTRLY_MASK, OLD_MASK)
IF(STATUS4.NE.1) CALL LIB$SIGNAL(%VAL(STATUS4))

```

```

! Queue An AST To Handle CTRL/Y Interrupts

```

```

STATUS4=SYS$QIOW(,
2          %VAL(IN_CHAN_AST),
2          %VAL(CODE_AST),
2          IOSB_AST,
2          ',
2          CTRLY_AST,      ! Queues This AST Until CTRL/Y
2          ',)

```

```

IF ( STATUS4.NE.1) CALL LIB$SIGNAL(%VAL(STATUS4))
IF ( IOSB_AST.NE.1) CALL LIB$SIGNAL(%VAL(IOSB_AST))

```

```

CTRLY=.FALSE.

```

```

RETURN
END

```

SUBROUTINE DQ_AST_CTRLY

INTEGER*4 STATUS4, SYS\$QIOW, LIB\$DISABLE

INCLUDE 'IODRVCOM'

INCLUDE 'CONTROLY'

! De-Queue An AST To Handle CTRL/Y Interrupts

```
STATUS4=SYS$QIOW(,  
 2          %VAL(IN_CHAN_AST),  
 2          %VAL(CODE_AST),  
 2          IOSB_AST,  
 2          ''  
 2          %VAL(0),      ! Disable All AST's This Channel  
 2          ,,,,)
```

! Check Status Of IO Request

```
IF ( STATUS4.NE.1) CALL LIB$SIGNAL(%VAL(STATUS4))  
IF ( IOSB_AST.NE.1) CALL LIB$SIGNAL(%VAL(IOSB_AST))
```

! Enable CTRL/Y Interrupts At DCL Level

```
STATUS4=LIB$DISABLE_CTRL(OLD_MASK, CTRLY_MASK)  
IF(STATUS4.NE.1) CALL LIB$SIGNAL(%VAL(STATUS4))
```

CTRLY=.FALSE.

RETURN

END

C Include file for INIT_ARRAYS subroutine
C

```
SUBROUTINE INIT_ARRAYS(Filespec)  
INCLUDE 'DATABUFF'
```

```
CHARACTER*(*) Filespec  
CHARACTER*30 DLABEL, BLANK20  
CHARACTER*7 DNAME, DMAX, DMIN, DFIELD, BLANK7  
CHARACTER*1 DALPHA  
CHARACTER*2 DCOMPR  
INTEGER*2 DSTART,  
 2      DLEN,  
 2      DPAGE,  
 2      DROW,  
 2      DCOL,  
 2      DTLU,  
 2      DRECNUM,  
 2      INVERSE, NORM, PAGE_NUM
```

D I M E N S I O N
DLABEL(100), DNAME(100), DSTART(100), DLEN(100), DPAGE(100),
2 DROW(100), DCOL(100), DALPHA(100), DMAX(100), DMIN(100),
2 DFIELD(100), DCOMPR(100), DTLU(100)

PARAMETER (BLANK20='

2 BLANK7=' ,
2 INVERSE=2,
2 NORM=0)

DATA DLABEL(1) /'NASA Alloys Data Base'//,

2 DLEN(1) /21/,
2 DPAGE(1) /1/,
2 DROW(1) /1/,
2 DCOL(1) /30/,
2 DLABEL(2) /'Page-Row-Column:'//,
2 DLEN(2) /16/,
2 DPAGE(2) /1/,
2 DROW(2) /1/,
2 DCOL(2) /58/,
2 DLABEL(4) /'Description Maintenance'//,
2 DLEN(4) /23/,
2 DPAGE(4) /1/,
2 DROW(4) /2/,
2 DCOL(4) /29/,
2 DNAME(3) /'KEY'//,
2 DSTART(3) /122//,
2 DLEN(3) /6/,
2 DPAGE(3) /1/,
2 DROW(3) /1/,
2 DCOL(3) /75/

DATA DLABEL(5) /'Screen Label:'//,

2 DLEN(5) /13/,
2 DPAGE(5) /2/,
2 DROW(5) /4/,
2 DCOL(5) /10/,
2 DNAME(6) /'LABEL'//,
2 DSTART(6) /1/,
2 DLEN(6) /30/,
2 DPAGE(6) /2/,
2 DROW(6) /4/,
2 DCOL(6) /24/,
2 DALPHA(6) /'A'//,
2 DLABEL(7) /'Field Name:'//,
2 DLEN(7) /11/,
2 DPAGE(7) /2/,
2 DROW(7) /4/,
2 DCOL(7) /55//,
2 DNAME(8) /'NAME'//,
2 DSTART(8) /31//,
2 DLEN(8) /7//,
2 DPAGE(8) /2//,

```
2   DROW(8) /4/,
2   DCOL(8) /67/,
2   DALPHA(8) /'A'/
DATA DLABEL(9) /'Start Position:'/,
2   DLEN(9) /15/,
2   DPAGE(9) /2/,
2   DROW(9) /6/,
2   DCOL(9) /10/,
2   DNAME(10) /'START'/,
2   DSTART(10) /38/,
2   DLEN(10) /3/,
2   DPAGE(10) /2/,
2   DROW(10) /6/,
2   DCOL(10) /26/,
2   DALPHA(10) /'I'/,
2   DMAX(10) /' 656.'/,
2   DMIN(10) /' . 0'/,
2   DLABEL(11) /'Field Length:'/,
2   DLEN(11) /13/,
2   DPAGE(11) /2/,
2   DROW(11) /6/,
2   DCOL(11) /32/,
2   DNAME(12) /'LEN'/,
2   DSTART(12) /41/,
2   DLEN(12) /3/,
2   DPAGE(12) /2/,
2   DROW(12) /6/,
2   DCOL(12) /46/,
2   DALPHA(12) /'I'/,
2   DMAX(12) /' 30.'/,
2   DMIN(12) /' 1.'/,
2   DLABEL(13) /'Screen Page:'/,
2   DLEN(13) /12/,
2   DPAGE(13) /2/,
2   DROW(13) /8/,
2   DCOL(13) /10/,
2   DNAME(14) /'PAGE'/,
2   DSTART(14) /44/,
2   DLEN(14) /1/,
2   DPAGE(14) /2/,
2   DROW(14) /8/,
2   DCOL(14) /23/,
2   DALPHA(14) /'I'/,
2   DMAX(14) /' 9'/,
2   DMIN(14) /' 1'/,
DATA DLABEL(15) /'Row:'/,
2   DLEN(15) /4/,
2   DPAGE(15) /2/,
2   DROW(15) /8/,
2   DCOL(15) /26/,
2   DNAME(16) /'ROW'/,
2   DSTART(16) /45/,
```

```
2   DLEN(16) /2/,
2   DPAGE(16) /2/,
2   DROW(16) /8/,
2   DCOL(16) /31/,
2   DALPHA(16) /'I'/,
2   DMAX(16) /' 24.'/,
2   DMIN(16) /'  1.'/,
2   DLABEL(17) /'Column:'/,
2   DLEN(17) /7/,
2   DPAGE(17) /2/,
2   DROW(17) /8/,
2   DCOL(17) /36/,
2   DNAME(18) /'COL'/,
2   DSTART(18) /47/,
2   DLEN(18) /3/,
2   DPAGE(18) /2/,
2   DROW(18) /8/,
2   DCOL(18) /44/,
2   DALPHA(18) /'I'/,
2   DMAX(18) /'  80.'/,
2   DMIN(18) /'  1.'/
DATA DLABEL(19) /'Alpha/Numeric/Integer:'/,
2   DLEN(19) /22/,
2   DPAGE(19) /2/,
2   DROW(19) /8/,
2   DCOL(19) /49/,
2   DNAME(20) /'ALPHA'/,
2   DSTART(20) /50/,
2   DLEN(20) /1/,
2   DPAGE(20) /2/,
2   DROW(20) /8/,
2   DCOL(20) /72/,
2   DALPHA(20) /'A'/
2   DLABEL(21) /'Maximum Value:'/,
2   DLEN(21) /14/,
2   DPAGE(21) /2/,
2   DROW(21) /10/,
2   DCOL(21) /10/,
2   DNAME(22) /'MAX'/,
2   DSTART(22) /51/,
2   DLEN(22) /7/,
2   DPAGE(22) /2/,
2   DROW(22) /10/,
2   DCOL(22) /25/,
2   DALPHA(22) /'A'/
DATA DLABEL(23) /'Minimum Value:'/,
2   DLEN(23) /14/,
2   DPAGE(23) /2/,
2   DROW(23) /10/,
2   DCOL(23) /34/,
2   DNAME(24) /'MIN'/,
2   DSTART(24) /58/,
```



```
2      DLEN(24) /7/,
2      DPAGE(24) /2/,
2      DROW(24) /10/,
2      DCOL(24) /49/,
2      DALPHA(24) /'A'/
2      DLABEL(25) /'This Field Must Be'//,
2      DLEN(25) /18/,
2      DPAGE(25) /2/,
2      DROW(25) /12/,
2      DCOL(25) /10/,
2      DNAME(26) /'COMPR'//,
2      DSTART(26) /72/,
2      DLEN(26) /2/,
2      DPAGE(26) /2/,
2      DROW(26) /12/,
2      DCOL(26) /29/,
2      DALPHA(26) /'A'/
DATA DLABEL(27) /'The Field Named'//,
2      DLEN(27) /16/,
2      DPAGE(27) /2/,
2      DROW(27) /12/,
2      DCOL(27) /33/,
2      DNAME(28) /'FIELD'//,
2      DSTART(28) /65/,
2      DLEN(28) /7/,
2      DPAGE(28) /2/,
2      DROW(28) /12/,
2      DCOL(28) /50/,
2      DALPHA(28) /'A'/
DATA DLABEL(29) /'Table Look Up # :'//,
2      DLEN(29) /17/,
2      DPAGE(29) /2/,
2      DROW(29) /14/,
2      DCOL(29) /10/,
2      DNAME(30) /'TLU'//,
2      DSTART(30) /74/,
2      DLEN(30) /2/,
2      DPAGE(30) /2/,
2      DROW(30) /14/,
2      DCOL(30) /28/,
2      DALPHA(30) /'I'//,
2      DMAX(30) /'    99.'//,
2      DMIN(30) /'    0.'//,
2      DTLU(30) /91/
DATA DLABEL(31) /'Enter D To Delete:'//,
2      DLEN(31) /18/,
2      DPAGE(31) /2/,
2      DROW(31) /21/,
2      DCOL(31) /30/,
2      DNAME(32) /'DEL'//,
2      DSTART(32) /128/,
2      DLEN(32) /1/,
```

```
2 DPAGE(32) /2/,
2 DROW(32) /21/,
2 DCOL(32) /49/,
2 DALPHA(32) /'A'/
DATA DLABEL(33) /'PF3-Prv Field'//,
2 DLEN(33) /13/,
2 DPAGE(33) /2/,
2 DROW(33) /24/,
2 DCOL(33) /1/,
2 DLABEL(34) /'PF4-Nxt Field'//,
2 DLEN(34) /13/,
2 DPAGE(34) /2/,
2 DROW(34) /24/,
2 DCOL(34) /16/,
2 DLABEL(35) /'PF1-Prv Scrn'//,
2 DLEN(35) /12/,
2 DPAGE(35) /2/,
2 DROW(35) /24/,
2 DCOL(35) /31/,
2 DLABEL(36) /'PF2-Nxt Scrn'//,
2 DLEN(36) /12/,
2 DPAGE(36) /2/,
2 DROW(36) /24/,
2 DCOL(36) /45/,
2 DLABEL(37) /'ENTER-Update Data'//,
2 DLEN(37) /17/,
2 DPAGE(37) /2/,
2 DROW(37) /24/,
2 DCOL(37) /61/
```

```
STAT=LIB$ERASE_PAGE
WRITE(6,90)
```

```
I=1
IF (Filespec.EQ.'FILESPEC') THEN
  SPECUNIT=89
  LRECL=128
  DO 100 WHILE (DPAGE(I).NE.0)
    LABEL(I)=DLABEL(I)
    NAME(I)=DNAME(I)
    START(I)=DSTART(I)
    LEN(I)=DLEN(I)
    PAGE(I)=DPAGE(I)
    ROW(I)=DROW(I)
    COL(I)=DCOL(I)
    ALPHA(I)=DALPHA(I)
    MAX(I)=DMAX(I)
    MIN(I)=DMIN(I)
    FIELD(I)=DFIELD(I)
    COMPR(I)=DCOMPR(I)
    TLU(I)=DTLU(I)
    I=I+1
```

```

100         END DO
           DO 110 J=I,300
             PAGE(J)=0
             START(J)=0
110        END DO
           ELSE IF(Filespec.EQ.'DATAFILE') THEN
             SPECUNIT=88
             LRECL=656
             OPEN(UNIT=90,FILE='FILESPEC',STATUS='OLD',
2            ORGANIZATION='INDEXED',ACCESS='KEYED',
2            IOSTAT=IOS)
             IF (IOS.EQ.0) THEN
               DO WHILE (IOS.EQ.0)
                 READ(UNIT=90,IOSTAT=IOS)FULLREC(1:128)
                 IF(IOS.EQ.0) THEN
                   READ(FULLREC,500)LABEL(I),NAME(I),START(I),LEN(I),
2                  PAGE(I),ROW(I),COL(I),ALPHA(I),MAX(I),MIN(I),
2                  FIELD(I),COMPR(I),TLU(I)
                   I=I+1
                   END IF
                 END DO
                 CLOSE(UNIT=90,IOSTAT=IOS)
                 DO 120 J=I,300
                   PAGE(J)=0
                   START(J)=0
                   XMIN(J)=0
                   XMAX(J)=0
120                END DO
             END IF
           END IF

           DO 130 I=1,10                                ! Mark All TLU Files Closed
             CLOSE(UNIT=I+90,STATUS='KEEP',IOSTAT=IOS,ERR=125)
125          WRITE(6,129) I
130          FILES_OPEN(I)=.FALSE.

           LIMITS(1,1)=1
           L=0
           PAGE_NUM=1
           I=1
           DO 300 WHILE (PAGE(I).NE.0)
             IF (PAGE(I).NE.PAGE_NUM) THEN           ! Found New Page, Set
               LIMITS(PAGE_NUM,2)=I-1                ! Data For This Page
               LIMITS(PAGE_NUM,3)=L
               L=0
               PAGE_NUM=PAGE(I)
               LIMITS(PAGE_NUM,1)=I
             END IF
             IF (START(I).NE.0) THEN                   ! Variable Field
               L=L+1
               VAR(PAGE_NUM,L)=I
               ATTRIB(I)=INVERSE

```

```

IF (ALPHA(I).NE.'A') THEN      ! Convert MAX, MIN To
  IF (MIN(I).NE.'          ') THEN
    READ (MIN(I),310,ERR=280) S ! Numeric For
    XMIN(I)=S                   ! Numeric Data Fields
  ELSE
    XMIN(I)=-9999999
  END IF
280  IF (MAX(I).NE.'          ') THEN
    READ (MAX(I),310,ERR=290) S
    XMAX(I)=S
  ELSE
    XMAX(I)=9999999
  END IF
END IF
IF (TLU(I).NE.0) THEN          ! Check For Table Look Up
  IF ((TLU(I).LE.100).AND.(TLU(I).GE.91)) THEN
    IF (.NOT.FILES_OPEN(TLU(I)-90)) THEN
      OPEN (UNIT=TLU(I),STATUS='OLD',DISP='KEEP',
2         ORGANIZATION='INDEXED',ACCESS='KEYED',
2         READONLY,SHARED,IOSTAT=IOS)
      IF (IOS.EQ.0) THEN
        FILES_OPEN(TLU(I)-90)=.TRUE.
        WRITE(6,285)TLU(I),NAME(I)
      ELSE
        WRITE(6,287)TLU(I),NAME(I)
      END IF
    ELSE
      WRITE(6,286)TLU(I),NAME(I)
    END IF
  ELSE
    WRITE(6,287)TLU(I),NAME(I)
  END IF
END IF
ELSE
  WRITE(6,287)TLU(I),NAME(I)
END IF
ELSE
  ATTRIB(I)=NORM              ! Display (Prompt) Field
END IF
290  I=I+1
300  END DO
LIMITS(PAGE_NUM,2)=I-1
LIMITS(PAGE_NUM,3)=L
MAX_PAGE=PAGE_NUM
HEADLINE=ROW(LIMITS(1,2))+1

! Set Up Cross Reference Array For Internal Comparisons
DO 400 I=2,MAX_PAGE
DO 400 J=1,LIMITS(I,3)
K=VAR(I,J)
IF (FIELD(K).NE.'          ') THEN
  DO 380 L=2,MAX_PAGE
  DO 380 M=1,LIMITS(L,3)
  N=VAR(L,M)
  IF (FIELD(K).EQ.NAME(N)) THEN

```

```
RECNUM(K)=N  
GOTO 400  
END IF  
380 CONTINUE  
END IF  
400 CONTINUE
```

```
! End Of Subroutine  
RETURN
```

```
90 FORMAT(1H ,///,T10,'Verifying And Opening Data Files.')
```

```
129 FORMAT(1H ,T10,'File FOR0',I2,' Closed.')
```

```
285 FORMAT(1H ,T10,'File FOR0',I2,' Opened To Verify Variable ',  
2 A8)
```

```
286 FORMAT(1H ,T4,'* * * Warning! File FOR0',I2,  
2 'Also Used To Verify Variable ',A8)
```

```
287 FORMAT(1H ,T4,'* * * Warning! Invalid File Number ',I2,  
2 'For Validation Of Variable ',A8,  
2 '. Validation Bypassed.')
```

```
310 FORMAT(BNF7.0)
```

```
500 FORMAT(A30,A7,I3,I3,I1,I2,I3,A1,A7,A7,A7,A2,I2)
```

```
END
```

```
C Include file for subroutine HEAD_SET  
C
```

```
SUBROUTINE HEAD_SET  
CHARACTER*9 Date_buff  
  
CALL DATE(Date_buff)  
  
STAT=LIB$ERASE_PAGE(1,1)  
STAT=LIB$SET_CURSOR(1,1)  
WRITE (6,100)Date_buff  
100 FORMAT(1H ,T20,'N A S A Alloys Data Base',T70,A9)  
RETURN  
END
```

```
C Include file defining FULLREC character array.
```

```
CHARACTER*1000 FULLREC  
CHARACTER*30 LABEL  
CHARACTER*20 FILE_ERROR,Succ  
CHARACTER*7 NAME,MAX,MIN,FIELD  
CHARACTER*1 ALPHA  
CHARACTER*2 COMPR  
CHARACTER*6 Flag,MODIFY,INSERT,NORMAL,COMPLETE,FAILED  
  
LOGICAL*1 FILES_OPEN(10)  
  
INTEGER*2 START,
```

```
2     LEN,  
2     PAGE,  
2     ROW,  
2     COL,  
2     TLU,  
2     RECNUM,  
2     LIMITS,  
2     VAR,  
2     MAX_PAGE,  
2     HEADLINE,  
2     ATTRIB,  
2     SPECUNIT,  
2     LRECL  
REAL*4  XMAX, XMIN
```

```
DIMENSION LABEL(300), NAME(300), START(300), LEN(300), PAGE(300),  
2     ROW(300), COL(300), ALPHA(300), MAX(300), MIN(300),  
2     FIELD(300), COMPR(300), TLU(300), RECNUM(300),  
2     XMAX(300), XMIN(300)  
DIMENSION VAR(9,100), LIMITS(9,3), ATTRIB(300)
```

```
COMMON /databuff/ FULLREC, LABEL, NAME, START, LEN, PAGE, MAX_PAGE,  
2     ROW, COL, ALPHA, MAX, MIN, ATTRIB, XMAX, XMIN,  
2     FIELD, COMPR, TLU, RECNUM, LIMITS, VAR, HEADLINE,  
2     Succ, Flag, MODIFY, INSERT, NORMAL, COMPLETE,  
2     FAILED, SPECUNIT, FILE_ERROR, LRECL,  
2     FILES_OPEN
```