NACA Documents Database Project

Final Report

for

National Aeronautics and Space Administration
Scientific and Technical Information Division, Code NTT

by
Ruth S. Smith
Consultant

April 1991

NASA STI PROGRAM
SCIENTIFIC &
TECHNICAL
INFORMATION

NACA DOCUMENTS DATABASE PROJECT

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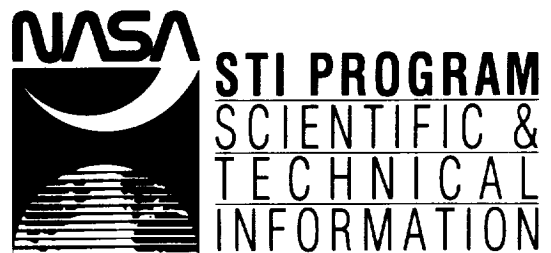Code: NTT

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CONTENTS

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

NACA DOCUMENT HOLDINGS

The centers that were surveyed have wide ranging collections of
NACA documents. Most have them in paper copy. The largest
collections are:

MASA and NASA-related centers

	NACA	Non-NACA
Jet Propulsion Laboratory	27,700	unknown
Langley Research Center	23,000	unknown
Lewis Research Center	17,549	3,504
NASA/STI Facility	16,000	15,000
AIAA	13,941	unknown
Kennedy Space Center	13,000	unknown
Johnson Space Center	12,000	0
Ames Research Center	unknown	5,000

Other centers/libraries

	NACA	Non-NACA
CalTech	"all"	100,000
AEDC Tech. Lib. (USAF)	18,600	
General Dynamics	17,025	
Wright Lab. Tech. Lib.	12,000	
Douglas Aircraft Co.	11,800	
LC Tech. Reports Sect.	11,600	

Updata converted to microfiche the NACA collection held by the
California Institute of Technology (CalTech). They have 13,941
microfiche, or the full text of an estimated 12,000 documents.

NACA publications held by the National Archives and Records
Center are identified in this report by series and the cubic feet
of space they occupy.

> A center's comment: NACA materials are crucial to
> understanding post WWII developments in rocketry, space
> science and American political development.

NACA BIBLIOGRAPHIC RECORDS

Ten of the NASA and NASA-related centers have bibliographic
records for NACA holdings and 6 have records for non-NACA
holdings. Seven of these centers would be willing to share their
records. However, most of these records are in card catalogs or
on microfilm cassettes from Langley. Redstone Scientific
Information Center and Langley Research Center are able to
provide NACA bibliographic records in electronic format.

<u>NASA/STIF</u>. A random review of the bibliographic records at the
Facility revealed:

o NACA records are on shelf list cards and microfilm
cassettes received from the Langley Research Center. The
cards were prepared during the time NACA existed.

o NACA publications have multiple report numbers. Also,
there is an overlap of NACA and NASA numbers during the
transition years.

o Early NACA reports are a part of the NACA Annual Reports.
Therefore, these individual reports are not identified in
the shelf list file.

o The online NACA records are diffused. Some are in each
of the G, D, and T files on NASA/RECON.

o Errors can easily be found in the online NACA Documents
Database (T file), constructed from the Langley shelf list
cards.

o Benefits of searching the current online NACA Database (T
file) are it can be searched by date of document and full
author's name (when available).

<u>User Needs</u>. The survey of centers identified the following user
needs.

<u>Data elements</u>. Fifteen NASA and NASA-related (N) centers
and 15 other (O) centers want the following basic data
elements in a useful NACA Document Database:

	N	**O**
Corporate author	100%	100%
Title	100%	100%
Report number	100%	100%
Date	93%	93%
Personal author(s)	67%	53%
Subject headings /terms*	67%	47%
Keywords	20%	0%
Shelf list number	20%	0%
Pagination (count)	20%	13%
Abstract	13%	6%
Aircraft type	13%	0%
Classification/limitations	13%	0%
Cross references	13%	0%
N-numbers	8%	6%
Series entry (number/title)	8%	6%
Author affiliation	8%	0%
Availability	8%	0%
Conference entry	8%	0%

	N	O
Contract numbers	8%	0%
Country of origin	8%	0%
Miscellaneous notes	8%	0%
Sub-titles	8%	0%
AD-numbers	0%	6%
NACA Wartime numbers	0%	6%

*Two respondents specified NASA Thesaurus terms.

Cataloging standards. Twelve NASA and NASA-related centers and 10 other centers recommended the following cataloging standards/guidelines for the NACA Documents Database:

	N	O
NASA/RECON/COSATI	58%	40%
MARC/AACRII	42%	20%
DTIC thesaurus	0%	10%
Less than full MARC	0%	10%

Time span. The greatest interest appears to be in the more recent material. When asked what time span is of greatest interest 13 NASA and NASA-related centers and 14 other centers responded. Five in the first group and six in the second said they needed it all.

	N	O
1915-1920	38%	57%
1920-1930	46%	50%
1930-1940	62%	71%
1940-1950	77%	86%
1950-	92%	79%

Optimal media. Online access is the first choice of 13 NASA and NASA-related centers (93%), as the optimal media for dissemination of bibliographic information; 7 of these also named CD/ROM; and 1 also chose printed indexes. CD/ROM is the only choice of 1 center.

Of the other centers surveyed, 11 named online access as the optimal media (69%); 7 of these also choose CD/ROM; and 2 also printed indexes. CD/ROM is the only choice of 5 centers.

NACA Bibliographic Database. Overall, the centers want the NACA bibliographic records already online to be "cleaned up" so they are more compatible with the records on NASA/RECON. They want all records added to the file. Specific recommendations include:

Make corrections. Correct all errors in spelling, typing, use of fields, publication year, classified status lines, exact report number identification, etc.

<u>Be consistent</u> in recording author names, report numbers, indexing terms, shelf list numbers, corporate names, etc. Validate subject headings. Maintain quality control.

<u>Enhance the file</u> with keywords, current thesaurus terms, abstracts, cross references, author's name where none is supplied, source of availability (confirmed), etc. (See basic elements at beginning of this section.)

<u>Improve search capabilities</u>. Make search strategies more consistent with the other files on NASA/RECON, including keywords and Boolean searching.

<u>Complete the file</u>. Verify that all formal NACA reports are entered and check the validity of the data.

<u>Assure document availability</u>. Provide for the accessibility of the documents. Enable orders to be placed online to NASA/STIF.

One NASA center commented: "No need for change - File T offers the full spectrum of searchable fields."

NACA DOCUMENT AVAILABILITY AND PRESERVATION

<u>Documents availability</u>. The survey indicates that document availability is of prime importance. Preferred delivery method and acceptable response time varies according to the needs of the centers. In general, regular mail and a reasonable response time are satisfactory. Fifteen NASA and NASA-related centers and 15 other centers responded as follows:

	NASA	Other
Availability	93%	94%
Delivery		
FAX	40%	50%
Overnight	13%	50%
Regular mail	67%	81%
Response time		
Fast	40%	44%
Reasonable	60%	69%
Whenever you can get it	0%	0%

The NASA and NASA-related centers make NACA documents available to users through reference use onsite, inhouse loan, interlibrary loan, and making copies. One of the centers charges a fee for making copies.

The other centers surveyed operate in much the same way. Three of those centers charge a fee for making copies.

NACA archives. Seventeen centers would be willing to serve as the archive for a non-NACA document if they had the last copy. Most would make it available in photocopy; one specified microfiche; others specified interlibrary loan and FAX.

Six who were not willing to serve as the archive indicated they would send the document, or a best copy, to NASA/STIF or the Langley Research Center for cataloging and microfiching.

> A center's comment: This needs agency oversight; it should not be left to the future staff at all the centers, when training and communication are liable to break down.

Archival responsibility and document accessibility are interrelated. Currently, 14 NASA and NASA-related centers and 16 other centers use the following sources the most, for acquiring needed NACA documents that are not in their own collections.

	NASA/STIF	Langley	NTIS	LC
NASA centers	92%	36%	23%	0
Other centers	50%	0	50%	19%

Preservation of documents. Deterioration of paper copy NACA reports and old microforms is a continuing problem. Potential media for preservation are silver halide microfiche, CD/ROM, and optical disk technology.

CONCLUSIONS AND NEXT STEPS

NACA documents holdings.

Various collections of NACA document exist. The real extent of overlap and/or gaps is still not known. No single center can claim a complete collection of NACA and non-NACA documents.

NACA documents database.

NACA bibliographic records are available among the centers who were surveyed. These are available electronically from three of the centers.

There are inadequacies in the current NACA online file that need to be fixed. It is not yet complete. Yet, it is being used.

> A center's comment: Capability to upload both Redstone SIC and Langley records into the NASA/RECON database should be explored. Downloading of records from NASA/RECON database will allow creating of local databases and prevent duplicate input of records. Uploading of records into NASA/RECON would distribute workload among participants.

NACA availability and preservation

The availability of documents in the NACA Database is of concern to the centers. Identification of the sources for availability as well as the preservation of archival holdings of these documents are challenges to be addressed.

Next steps

A three phase approach is recommended:

> Phase 1: NACA Bibliographic Records. Bring the quality of the NACA Documents Database to a level acceptable to users and complete the Database.

> Phase 2: Access to Database Records. Develop products/services that maximize use of the Database. This includes developing products/programs to facilitate use of the Database.

> Phase 3: NASA Document Availability. Assure that the documents in the Database are available. This includes establishing archival responsibility and addressing the problem of document preservation.

Recommended steps for action within each of the phases are described in the report.

Note: Percentages are based on the number of centers answering each question. They do not include the number of centers who did not answer the question.

INTRODUCTION

The NACA Documents Database was introduced in the mid-1980s, when some of the bibliographic records from the National Advisory Committee on Aeronautics (NACA) collection were made accessible on NASA/RECON. The plan to get all the NACA collection online, with quality records, led to the NACA Documents Database Project.

PURPOSE

The NACA Documents Database Project has a two-fold purpose: (1) to develop the definitive bibliography of NACA produced and/or held documents, and (2) to make that bibliography and the associated documents available to the aerospace community.

This study supports the first objective by providing an analysis of the NACA collection and its bibliographic records, and supports the second objective by defining the NACA archive and recommending methodologies for meeting the project objectives.

BACKGROUND

The NACA collection has been estimated at 15,000 to 25,000 NACA documents and 85,000 to 150,000 non-NACA documents. The records for a portion of the NACA collection are on cards and microfilm cassettes at NASA's Scientific and Technical Information Facility (STIF). Some of the reports may have been declassified over the years but still carry the classified markings.

Approximately 15,000 NACA and 85,000 non-NACA bibliographic records have been entered into a database to make this collection available to online users of NASA/RECON. Decisions were made to (1) maximize access to the records and (2) minimize the costs of creating the NACA database. However, users have complained that there are errors and other problems in searching these NACA records.

Portions of the NACA archive are available at the STIF; some of the documents are available at other NASA centers and contractors, other Federal agencies such as the National Archives and Records Administration (NARA), universities, and commercial enterprises. However, the number and location of all the NACA and non-NACA documents extant are not totally known at this time.

NASA would like to make the entire NACA collection available to the aerospace community. Because the NACA collection is a closed set, the NACA database is a reasonable candidate for publication and dissemination on CD-ROM. Alternately or additionally, the

complete NACA database could be made available online. NASA further would like to define and/or develop a NACA archive from which to provide the complete text of requested documents to fulfill the objectives of this project.

STUDY REQUIREMENTS

Before putting the entire NACA collection online and/or on CD-ROM, the quality of the database must be brought to a level acceptable to the users. Additional information is needed in order to adequately address this and meet other project objectives:

1. Number of NACA and non-NACA documents.

2. Availability of bibliographic records for those documents.

3. Location and availability of the documents themselves.

4. Level of standardization of cataloging for those documents already cataloged

5. User requirements for a useful NACA database including but not limited to data elements, cataloging conversions and/or standards and optimal media for dissemination of bibliographic information.

6. User requirements for a useful NACA archive including but not limited to document availability and document delivery methods and response times.

7. Recommended methodology for developing and/or upgrading electronic bibliographic records to a level acceptable to the users.

8. Estimate of level of effort, time frame and cost for completing the development of the definitive NACA database.

9. Recommended methodology for defining and/or developing the associated NACA archive.

These requirements are for the entire project. This study is intended to provide (a) an analysis of existing NACA collections and bibliographic records and (b) direction toward meeting all the requirements of the project.

STUDY METHOD

Data for this study were collected using three basic techniques: (1) a survey of NASA centers and others by telephone interviews,

a written questionnaire, and visits to the NASA STI Facility (2) a group discussion with principal users at a NASA STI Project Coordinating Council meeting, and (3) spot-check review of the NACA collection bibliographic files and documents. These methods are described below.

Centers survey. A first list was compiled of contacts at the NASA research centers, NASA-related centers, and selected libraries with significant collections of NACA reports was compiled. Then, a questionnaire was developed to collect data that would (a) help to determine who has what NACA collection documents and if available, (b) user requirements for a definitive NACA Document Database, and (c) archival availability of the NACA collection.

Telephone calls were made to the centers and selected libraries on the list, to explain the survey and solicit cooperation in gathering the needed data. A follow-up letter enclosing the questionnaire was sent to all who agreed to participate.

A second list of contacts was compiled from the membership directory of the Special Libraries Association Aerospace Division. These contacts represented libraries with significant collections of technical reports and access to NASA/RECON. Without a preliminary telephone call, a letter explaining the purpose of the study and enclosing the questionnaire (with questions about non-NACA documents omitted) was sent to each of the contacts.

Spot check review. Visits were made to the NASA Scientific and Technical Information Facility (NASA/STIF) to (1) talk with designated staff members, (2) random check the NACA bibliographic records, those online as well as those on the cards and microfilm cassettes, and (3) spot check the documents in storage. Additional background resources were supplied by NASA/STIF staff.

Group discussion. In cooperation with NASA/HQ-NTT, a meeting was held at which members of the NASA STI Program Coordinating Council discussed the project with members of the user community. Representatives from the NASA research centers, the NASA-related centers, and selected others were invited to attend. Support for this meeting was provided by drafing an agenda and contacting the centers by letter and telephone.

Working groups. At the STI Program meeting, working groups were formed to address the following specific NACA Documents Database issues and concerns:

    Collection definition
    Planning (how to pull it together)
    Bibliographic citation format (file requirements to change)

10

Availability (distribution, restrictions, international issues)
Preservation/media (special environmental conditions, NARA, NWRC)
CD-ROM issues

DATA COLLECTION

The data collected focused on three specific areas:

NACA holdings. This was to determine who has what and if it is available. Data were collected on holdings, bibliographic records, and documents availability.

User requirements. This was to help determine user requirements for a definitive NACA Documents Database. This included pinpointing user problems with searching the initial online NACA database (on NASA/RECON). It also was intended to identify methods and requirements for document availability and delivery.

NACA archives. This was to help determine the status of archival availability of the NACA collection.

RESPONSE TO THE SURVEY

A total of 40 centers were surveyed. The first survey was among 12 NASA centers, 3 NASA-related centers, and 8 selected other centers. The second involved 17 other centers which were authorized users of NASA/RECON and had significant holdings of technical reports.

Response rate of the NASA and NASA-related centers was 100%. Overall response rate was 78%.

NACA DOCUMENT HOLDINGS

Data on NACA documents holdings were gathered from the survey of
centers to determine who has what among the NASA centers, NASA-
related centers and selected other centers and libraries. The
results are reported below.

SURVEY OF HOLDINGS

**Q: How many NACA (originated) documents does your
center/library hold? In what format are they held?**
(* means the number is an estimate)

NASA and NASA-related centers:

	Number	Format
AIAA	13,941*	100% microform
Ames Dryden	198 lin. ft.	100% paper
Ames RC		90% paper, 10% microform
Goddard ISS	0	
Goddard SFC	43*	100% paper
JPL	27,700	100% microform
Johnson SC	12,000*	90% paper, 10% microform
Kennedy SC	13,000	25% paper, 75% microform
Langley RC	23,000	100% paper, 75% microform
Lewis RC	17,549	100% paper
NASA/HQ Lib	720	100% paper
NASA/STIF	16,000*	100% paper, 7.5% micro.
Marshall SFC	0	
Redstone SIC	5,600	100% paper
Stennis SC	0	

Other centers:

	Number	Format
AEDC	18,600	28.5% paper, 71.5% micro.
Boeing	5,000	Paper, microform
CalTech	all	90% paper, 99+ microform
Cubic	1	100% paper
Douglas	11,800	100% paper
FluiDyne	450	100% paper
G. Dynamics	17,025*	100% paper
Gulfstream	6,000+	100% paper
LC	11,600*	Unknown
Nielsen	2,500*	Paper
Raytheon	3,000	Microform, other
NIST	810	100% paper
NTIS	6,300	100% paper
Rockwell	1,600	100% paper
TRW	4,500*	100% paper

	Number	Format
U. of MD	7,834	100% paper
Wright Lab.	12,000	95% paper, 5% microform

Q: How many non-NACA documents from the NACA collection does your center/library hold? In what format are they held?

NASA and NASA-related centers:

	Number	Format
AIAA	unknown	100% paper
Ames Dryden	0	
Ames RC	5,000*	90% paper, 10% microform
Goddard ISS	0	
Goddard SFC	0	
JPL	unknown	
Johnson SC	0	
Langley RC	unknown	paper, microform
Lewis RC	3,504	100% paper
Marshall SFC	0	
NASA/HQ Lib	0	
NASA/STIF	15,000*	100% paper
Redstone SIC	unknown	
Stennis SC	0	

Other centers:

	Number	Format
CalTech	100,000	50% paper
LC	unspecified	
NTIS	unspecified	
U. of MD	0	

SPECIFIC COLLECTIONS IDENTIFIED

AIAA holdings of NACA documents include the TNs, TMs, R, WR, RMs, Index. They have the Updata collection in microfiche and "probably a good part of the 1958-63 'changeover' documents. Also, substantial files of Great Britain, German, Canadian, Australian, etc. reports, and holdings of the 'core journals.'"

Ames RC has all TR, TN, TM, RM, and most Memos, Circulars; 5,000 non-NACA N numbers; also Updata microfiche.

Goddard SFC library maintains a "very basic core of formal NACA Reports (1915-1957). Goddard library users have little call for NACA material as they once did when we had the Sounding Rockets Group at Greenbelt."

Johnson SC holdings include NACA TNs no. 1-840 (1935-1958), NACA TNDs no. 835-3859 (1959-1967).

NASA/STIF. The NACA collection at NASA/STIF was received about 1980 from NASA Headquarters. These holdings are estimated at 16,000 NACA and 15,000 non-NACA reports. There are significant gaps in the collection. For example, a random pull of cards from those already input to the NACA online database (first card from each drawer) resulted in a list of mostly non-NACA documents. Of these, only two were held in the collection and one of the two was missing. Approximately 1,200 NACA items, mostly RMs, were microfiched and were given full bibliographic processing.

Cubic. "Ai Research Manufacturing Co. in Torrance, CA has a rather large NACA holdings. Yanghoon Rhee, Manager, (213) 512-3666."

G. Dynamics. "The following constitute the holdings of the Convair Research Library's NACA collection. Included are NASA Memos filed with NACA.

NACA-RM 50J19-SL58B13 (various dates)	5,100
NACA-TM 135-1441 (Sept. 1922-Sept. 1958)	1,150
NACA-TN 241=4410 (July 1926-Sept. 1958)	6,300
NACA-report 1-1392 (Bound vols. and unbound, 1915-1958)	2,500
NACA-ACR 3D14-L6E15 (April 1943-June 1946)	175
NACA-ARR 3D16-L6D08 (April 1943-June 1946)	350
NACA-CB 3D24-L6D08 (May 1943-April 1946)	50
NACA MR 3F12-L6H22 (April 1943-Sept. 1946)	350
NACA-RB 3D26-L6G22 (April a943-Aug. 1946)	50
NACA Unnumbered (1947-1948)	700
NASA-MEMO 1-2-59E - 12-31-58L (1958-1959)	350
	17,025

Gulfstream. "We have many NACA documents which we plan to weed out in future because they do not apply to our needs."

LC. "The Library's general collections contain the following document series:

NACA-TM #1-1441 (1920-58)	TL507.U57
NACA-RM, in 3 series (A, E, L) but unnumbered consecutively (1947-50) est. 2,800	TL507.U675
NACA-WR, series A #1-94	TL507.U68
NACA-WR, series E #1-285	TL507.U7
NACA-WR, series L #1-108	TL507.U72
NACA-WR, series W #1-108	TL507.U74
NACA (Annual) Report (no series code) (1915-58) Each annual report contains the technical reports issued during that year.	TL521.A3

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    NACA Annual Report (1923-56)
         The annual report portion of the
         above report.                                    TL521.A32
    NACA Technical Reports (NACA-TR)
         #1-1392 (1915-58)
         The technical report portion of
         the above report.                                TL521.A33
    NACA-TN #1-4410 (1920-58)                             TL521.A35
    NACA Aircraft Circulars #1-209
         (1926-37)                                        TL.521.A353
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Raytheon. NACA TN-343 to 4410, RM-51K06 to RM-58G31, and bound
reports 1941 #704 to 1958 #1391.

Updata (1746 Westwood Boulevard, Los Angeles, CA 90024) converted
to silver halide microfiche the entire NACA collection held by
the California Institute of Technology (CalTech). According to
Mr. Herb Sclar, the Updata microfiche collection contains 13,941
microfiche, or the full text of an estimated 12,000 NACA
documents. This includes oversize documents. In addition, they
have 4,458 microfiche of documents from the 1958-1963 transition
period.

NATIONAL ARCHIVAL COLLECTIONS

The National Archives and Records Administration (NARA) has
significant holdings of NACA documents. These holdings are
described in *A Special Study on the Records of the National
Advisory Committee for Aeronautics* (National Archives and Records
Service, July 1972).

According to the report, the NACA records they hold are in the
following categories:

    1. Correspondence Files
    2. Publication Files
    3. Reference Collection
    4. Organizational Records
    5. Topical Files

Records are identified by numbers of boxes and cubic feet of
records rather than numbers of documents.

The PUBLICATIONS FILES comprise 680 cubic feet of records. They
contain the NACA publications from 1916 to 1961. The complexity
of locating and identifying specific documents in this collection
is illustrated by the following quote from the report:

     "This accession comprises the NACA papers which describe the
     aeronautical research and findings that NACA sponsored,
     encouraged, or did. Most reports were initially made by

specialists at airplane manufacturing laboratories; private
research institutions; Governmental agencies (including
NACA), primarily military; and in foreign countries.
Usually, the basic study and any later revision are also
filed in the numbered folder. As an example NACA <u>Report</u>
No. 852 was printed and sold by the Government Printing
Office (GPO). It had been <u>Technical Note</u> No. 1229... which
had been <u>Revised Memorandum Report</u>... which had been
<u>Memorandum Report</u>. All the papers are filed in the Report
No. 852 folder."

The Publications Files contain the following series:

<u>Technical Reports (TR)</u>: TR-8 through TR-999 (circa 1916-
1948) (some missing); TR-1000-1362 (1950-1958) (do not have
"technical" on the printed cover, simply labeled "Report 1000").

<u>Technical Memorandum (TM)</u>:

> TM-2-999 (circa 1920-1941) (some missing)
> TM-1000-1199 (1941-1949)
> TM-1200-1235 (1949-1958) (missing)
> TM-1236-2539 (1949-1958) (with omissions)

<u>Technical Notes (TN)</u>:

> TN-1-1999 (circa 1920-1950) (some missing)
> TN-2000-2510 (1950-1951)
> TN-1130-4410 (1948-1958)

<u>Wartime Reports (WR)</u>: Forty six boxes of WRs [not otherwise
identified] and WR numbers W52-W67 (released 1946-1947).

<u>Research Memorandums (RM) and Memorandum Reports (MR)</u>: In
boxes [not otherwise identified].

<u>Aircraft Circulars (AC)</u>: NACA Aircraft Circulars nos. 1-
208, January 1926-September 1937.

<u>Research Authorizations (RA) and Research Reports</u>: Folders
which sometimes are arranged in numerical order under TR numbers
and TN numbers. Some RAs are missing. Also included in the
folder is correspondence.

The REFERENCE COLLECTION is composed of Reference Documents and
Miscellaneous Reference Files that constitute 1426 cubic feet of
material. It contains the following series:

<u>Classified File</u>: This is a "classified" subject file. One
series of boxes contains the first part of the NACA "N" File
Series (N62 through N8138). Another contains the N Series

running from N66 through N16746, followed by 18481A. The file contains only a few NACA originated documents.

Aeronautical Documents File: This file also is arranged by subject. One group of boxes is identified as having been maintained by the Acquisitions Branch of the Library, Division of Research Information, NACA Headquarters. It contains mimeographed, and typed reports, studies, and translations prepared by specialists and scientists of military agencies, commercial manufacturing plants, and foreign countries. The file also includes NACA Circulars.

Reference Documents. Some of these boxes were acquired from the NACA Headquarters Library. Folders are arranged by subject number, under a four digit numerical code (sometimes followed by a decimal point and another digit). Boxes acquired from the Lewis Library and the Ames Library contain the N code numerical arrangement as well as codes numbering four digits, such as 3000.

Research Documents. These were transferred from Langley Research Center. The file includes foreign nations reports, NACA Paris Office reports, reports of U.S. Government agencies, and reports of contractors.

Miscellaneous Reference Files. This file contains a Magazine File, a House Organs File, and Books - which the report recommends be offered to the Smithsonian Air and Space Museum. It also includes a Correspondence File of the Office of Aeronautical Intelligence which includes file folders of "rejected TN's" (those studies recommended for TN status, but not granted).

The Washington National Records Center (WNRC). In the 1950's, boxes of NACA records containing approximately 1,256 aeronautics documents covering 1917-1962 (highest classification confidential) were transferred from NASA to the WNRC for review to determine if they should be transferred to NARA.

The contents of these boxes are identified on the transmittal forms, by container and report number ranges. Example: Container K-1, N-14 to N-112.

In June 1990, it was determined that these records would be transferred to NARA as of January 1, 1992.

Government Printing Office (GPO). The Federal publications that once made up the GPO Library were transferred to NARA a number of years ago. Included in that transfer were the NACA reports in GPO's collection. However, all NACA documents distributed by GPO through the Depository Library System during those years would have been retained by the Regional Depository Libraries.

National Technical Information Service (NTIS). Both the Defense Technical Information Center (DTIC) and NASA send copies of unclassified unlimited reports to NTIS for announcement and sale to the public. The documents deposited with NTIS are retained indefinitely.

OBSERVATIONS ON DOCUMENT HOLDINGS

Significant collections of NACA documents exist. There may be other significant holdings at centers which were not surveyed. The overlap of these collections and the gaps are still not known.

"Missing" NACA documents might not even exist. Some documents were "rejected" and never issued. Others were incorporated into subsequent documents which were assigned new numbers.

To identify a "complete collection" of NACA documents will require identifying:

o   All report numbers that were assigned.

o   Reports that were cancelled, recalled, or rejected.

o   Reports that later were re-issued under a new report number.

o   Holders of specific documents on the "complete collection" list.

NACA BIBLIOGRAPHIC RECORDS

The survey of centers gathered data on NACA bibliographic records and user needs for access to a definitive NACA Bibliographic Database. Additional information about available NACA bibliographic records was obtained from visits to NASA/STIF.

NACA RECORDS AT NASA/STIF

A random review of the NACA bibliographic records at NASA/STIF revealed the following:

1. NACA records from Langley.

    The Langley NACA shelf list records include official NACA documents as well as non-NACA document that were in the Langley collection between 1915 and 1960. It is considered the most complete record available of the overall NACA collection.

    The cards are arranged in shelf list number order. They have no standardized format, so the content of the cards varies. There is inconsistency in the way authors, report numbers, etc. are recorded.

    The microfilm cassette file contains the Langley shelf list cards arranged by author, subject and corporate source.

2. Multiple report numbers.

    A quick search of NASA/RECON database identified 3,713 documents with both NASA and NACA numbers.

    Non-NACA reports used by NACA as reference documents were assigned NACA numbers, such as WR or N. They also had report numbers which were assigned by the originating organization. Example: Martin JRM-1/1 [Glenn L. Martin Company] was issued as NACA WR W-106. This report also has other numbers: NACA ARR 5L03, decimal number 1195.62, and T-file accession number 84H32720.

    Subject "case files" contain both NACA and non-NACA documents. The folders are filed by subject decimal numbers (sometimes erroneously called Dewey numbers). At NASA/STIF these case file folders are shelved with the non-NACA collection.

3. Missing records.

   Some "inactive" or missing documents in the NACA series are
   identified in the Langley shelf list cards as superseded,
   cancelled, etc.

   The earliest NACA documents were issued as part of the NACA
   Annual Reports. The bibliographic records for the Annual
   Reports are in ARIN (Aerospace Research Information
   Network). However, ARIN does not include analytics for the
   individual NACA reports.

4. Diffusion of NACA records in NASA/RECON.

   NACA report may appear in the NASA/RECON file "G" and file
   "D" as well as in file "T." For example, a quick search
   found 730 titles with NACA numbers in file "G" (older
   material), 538 in file "D" (1969 to present), and 13,591 in
   file "T" (the NACA Database). The full extent of overlap is
   not known.

   Many of the 13,591 titles in file "T" are non-NACA
   documents.

   Although there is a NACA subject list that represents the
   subject terms in the database, no attempt has been made to
   equate or translate these terms to be compatible with the
   current NASA/RECON subject list.

   The present file "T" includes 38 indexes that refer to NACA
   reports.

5. Errors in the NACA Database.

   Errors in the present NACA Database (file T) include
   misspellings, subjects in both singular and plural, report
   numbers sometimes with spaces and/or punctuation and
   sometimes not, and inconsistencies in the use of fields.

   Examples: For 87H20034, the report number is identified as
   Contract DA-11-ORD-137. For 86H10777, there is no report
   number, but the miscellaneous field identifies Air
   Publication 1299. The JRM-1 report noted above in section 2
   could not be located in an online search by that report
   number. It was located by searching the author's name.
   JRM-1 was input as part of the title (JRM-1 landing
   impact...), the shelf list number (1195.62 Martin JRM-1-1),
   and a subject (Landings - Seaplanes - Martin JRM-1) but was
   not picked up as a report number.

6. Benefits in the NACA Database.

   Although there are variable spellings, variable spacings, and sometimes both singular and plural of the same subject term, the expand command allows the searcher to see all the variations.

   The present NACA Database is searchable by publication date and by full name of author (when available).

SURVEY OF BIBLIOGRAPHIC RECORDS

Data on NACA bibliographic records collected from the survey of centers is summarized below.

Q: Does your library have bibliographic records for these documents? In what format are your center/library's bibliographic records?

NASA and NASA-related centers:

	NACA	Non-NACA	Format
AIAA	yes	yes/some	Card catalog/some Printed indexes
Ames Dryden	yes	yes	Langley microfilm NACA bib. 1909-31
Ames RC	yes	yes	Langley cards Langley microfilm
Goddard SFC		no	
JPL	yes		Card catalog
Johnson SC	yes		Card catalog
Kennedy SC	yes		Card catalog
Langley RC	yes	yes	Card catalog Inhouse online
Lewis RC	yes	yes	Card catalog
NASA/HQ Lib	no	no	
NASA/STIF	yes	yes	Card catalog Inhouse online Printout
Redstone SIC	yes		Card catalog

	NACA	Non-NACA	Format
Stennis SC			Inhouse online
Total yes:	10	6	

Other centers:

	NACA	Non-NACA	Format
AEDC	yes		Card catalog/most
Boeing	no	no	
CalTech	yes		Card catalog
Cubic	yes		Inhouse online
Douglas	yes, only 10%		Inhouse online
FluiDyne	yes		Card catalog
G. Dynamics	no (shelved by report number)		
Gulfstream	yes (partial)		Card shelf list Inhouse online
LC	no (series only)		
Nielsen	no (only for 153 of them)		Inhouse online
NIST	yes		Card catalog Inhouse online
NTIS	yes		Card catalog Inhouse online
Raytheon	no		
Rockwell	yes		Inhouse online
TRW	no		
U. of MD	no	no	
Wright Lab.	no		Inhouse online
Total yes:	9	0	

Q: Would you be willing to make your bibliographic records available for a NACA Documents Database? If yes, could they be supplied in machine-readable form?

NASA and NASA-related centers:

	Available	Machine readable
AIAA	yes	no
Ames Dryden	yes	no
Ames RC	yes	no
JPL	yes	no
Johnson SC	no	no
Kennedy SC	yes	no
Langley RC	(Further explanation is required)	
Lewis RC		no
NASA/STIF	yes	yes
Redstone SIC	yes	yes
Stennis SC	no	
Total yes:	7	2

Other centers:

	Available	Machine readable
AEDC	(Willing to discuss)	no
CalTech	yes	no
Cubic	yes	no
Douglas	yes	yes
FluiDyne	yes	no
Gulfstream	yes	yes
NIST	no	no
NTIS	yes	no
Rockwell	no	
Total yes:	5	1

Q: What cataloging standards were used to create your bibliographic records?

NASA and NASA-related centers:

	Standard used
AIAA	NACA guidelines
Ames RC	What was used by HQ or LARC in creating cards
JPL	Inhouse system and NACA printed cards
Johnson SC	No specific standard
Kennedy SC	Other COSATI-based guidelines
Langley RC	NACA descriptive and subject cataloging rules
Lewis RC	Old Langley file
NASA/STIF	NASA RECON guidelines
Redstone SIC	Other COSATI-based guidelines (COSATI and inhouse)
Stennis SC	MARC/AACR/AACRII rules

Other centers:

	Standard used
AEDC	Cards preprinted in reports or produced locally
CalTech	NACA generated records only
Cubic	Other COSATI-based guidelines
Douglas	MARC/AACR/AACRII rules
FluiDyne	Other COSATI-based guidelines
Gulfstream	Simplified/modified NASA and COSATI
NIST	Not known
NTIS	NASA/RECON or other COSATI-based guidelines
Rockwell	Other COSATI-based guidelines

Q: How many times a month does your staff search the NACA documents bibliographic records?

NASA and NASA-related centers:

	None	1-20	20-50	More than 50
AIAA		x		
Ames Dryden		x		
Ames RC			x	
JPL		x		
Johnson SC		x		
Kennedy SC	x			
Langley RC				x
Lewis RC		x		
NASA/STIF		x		
Redstone SIC			x	
Stennis SC		x		
Total	1	7	2	1

Other centers:

	None	1-20	20-50	More than 50
AEDC		x		
CalTech			x	
Cubic	x			
Douglas		x		
FluiDyne		x		
G.Dynamics		x		
Gulfstream	x			
Nielsen		x		
NIST	x			
NTIS			x	
Raytheon		x		
Rockwell			x	
TRW	x (none trained)			
Wright Lab.		x		
Total	4	7	3	0

SURVEY OF USER NEEDS

Q: What basic data elements do you consider essential to create a useful NACA Document Database?

NASA and NASA-related centers:

All 15 of the NASA and NASA-related centers consider corporate author, title, and report number to be essential. Other elements considered to be essential are, as follows:

	Date	Author	Subjects	Other
AIAA	x			Number of pages
Ames Dryden	x	x	x	Aircraft type
Ames RC	x	x		Shelf list number Aircraft type
Goddard ISS				Series entry
Goddard SFC	x	x	x	Keywords
JPL	x	x	x	
Johnson SC	x		x	
Kennedy SC	x		x	
Langley RC	x	x	x	Conference entries Abstract Author affiliation Subtitles Cross references
Lewis RC	x	x	x	NASA thesaurus terms Pagination Shelf list number Classification Limitations
Marshall SFC	x	x	x	NASA subject terms Classification Restrictions Availability
NASA/HQ Lib	x	x		Keywords
NASA/STIF	x	x	x	Shelf list number Cross references
	Date	Author	Subjects	Other N-numbers

Abstract
Contract number
Country of origin
Page count
Miscellaneous notes

Redstone SIC	x	x	x	Keywords
Stennis SC	x			
Total	14̄	1̄0̄	1̄0̄	

Other centers:

All 15 who responded to this question consider corporate author, title and report number to be essential. Other elements:

	Date	Author	Subjects	Other
AEDC	x	x	x	
Boeing	x			Abstract
CalTech	x	x		N numbers AD numbers
Cubic	x		x	
Douglas	x			NACA Wartime nos.
FluiDyne				
G. Dynamics	x	x	x	
Gulfstream	x	x	x	Page count
LC	x		x	
Nielsen	x		x	
NTIS	x	x		Number of pages
Raytheon	x	x	x	
Rockwell	x	x		
TRW	x			
U. of MD	x	x		Series title, no.
Total	1̄4̄	8̄	7̄	

Q: What cataloging standard/guidelines do you recommend be used to create the NACA Documents Database?

NASA and NASA-related centers:

	MARC/AACR	NASA/RECON	COSATI/CENDI	Other
Ames RC		x		
Goddard ISS	x			
Goddard SFC		x		
JPL	x			
Johnson SC		x		
Kennedy SC	x			
Langley RC		x		
Lewis RC	x			
NASA/HQ Lib		x		
NASA/STIF			x	
Redstone SIC			x	
Stennis SC	x			
Total	5	5	2	

Other centers:

	MARC/AACR	NASA/RECON	COSATI/CENDI	Other
AEDC		x		
Cubic				DTIC
Douglas	x			
FluiDyne				Doesn't matter
G. Dynamics		x		
Gulfstream		x	x	
NTIS		x		
Rockwell			x	
U. of MD	x			
Wright Lab.				Less than full MARC
Total	2	4	2	

Q: What time span is of greatest interest?

NASA and NASA-related centers:

	1915-20	1920-30	1930-40	1940-50	1950+
AIAA			x	x	
Ames Dryden	x	x	x	x	x
Ames RC	x	x	x	x	x
Goddard ISS					x
Goddard SFC					x
JPL				x	x
	1915-20	1920-30	1930-40	1940-50	1950+
Johnson SC					x

Langley RC	x	x	x	x	x
Lewis RC		x	x	x	x
NASA/HQ Lib			x	x	x
NASA/STIF	x	x	x	x	x
Redstone SIC	x	x	x	x	x
Stennis SC				x	x
Total	5	6	8	10	12

Other centers:

	1915-20	1920-30	1930-40	1940-50	1950+
AEDC	x	x	x	x	x
Boeing			x	x	x
CalTech	x	x	x	x	x
Douglas			x	x	
FluiDyne			x	x	
G. Dynamics					x
Gulfstream	x	x	x	x	x
Nielsen	x	x	x	x	x
NTIS	x	x	x	x	x
Raytheon				x	x
Rockwell	x	x	x	x	x
TRW					x
U. of MD	x			x	
Wright Lab.	x	x	x	x	x
Total	8	7	10	12	11

Q: What do you consider the optimal media for dissemination of bibliographic information?

NASA and NASA-related centers:

	Online	CD/ROM	Printed	Other
AIAA	x	x		
Ames Dryden	x			
Ames RC	x	x		
Goddard ISS	x			
Goddard SFC	x			
JPL	x			
Johnson SC	x			
Kennedy SC	x		x	
Langley RC	x	x		
Lewis RC	x	x		
NASA/HQ Lib		x		
NASA/STIF	x	x		
Redstone SIC	x	x		
Stennis SC	x			
	13	7	1	

Other centers:

	Online	CD/ROM	Printed	Other
AEDC	x			
Boeing	x	x		
CalTech	x	x		
Cubic	x			
Douglas		x		
FluiDyne	x			
G. Dynamics	x			
Gulfstream		x		
LC	x	x		
Nielsen	x			
NTIS	x		x	
Raytheon	x		x	
Rockwell		x		
TRW	x			
U. of MD		x		
Wright Lab.		x		
Total	11	8	2	

SURVEY OF NACA ONLINE DATABASE

Q: In regard to the NACA documents records already online on NASA/RECON, how would you like this file changed? Number each of the changes recommended, beginning with 1 for the highest importance, to give them an order of priority.

NASA and NASA-related centers:

AIAA	1.	Correction and consolidation of report number and author citations.
	2.	Personal authors where none supplied.
Ames RC	1.	Update all classified status lines.
	2.	Standardize form of entry for SLN and RN.
	3.	Standardize indexing terms, or have cross references.
	4.	Improve quality control.
	5.	Ensure complete entry.
Goddard ISS	1.	More retroconversion of records.
	2.	More contents analysis.
	3.	Exhaustive listing (fill in series gaps).
	4.	Authority control w/LC.
Goddard SFC	1.	No need for change - File T offers the full spectrum of searchable fields. [Added comment at end of questionnaire: I have only had about 10 occasions to query the NACA File T since its installment in RECON. I made a

thorough usage of all the searchable fields
                                    in File T and found them good as they are. I
                                    see no need for change.]

JPL   1.   System hasn't been used enough to form an
                      opinion.

Johnson SC   1.   Need abstract.

Langley RC   1.   Correct all spelling and typing errors.
                2.   Standing format for report numbers.
                3.   Consistent format for authors.
                4.   Increase quality to improve integrity of
                      database.
                5.   Validation of subject headings.

Lewis RC   1.   Exact report number identification.
                2.   Correct authors (not corporate)
                3.   Correct publication year.
                4.   NASA thesaurus indexing.

Marshall SFC   1.   Make search strategies consistent with other
                      files.
                2.   Make sure that there is an actual document
                      for each record.

NASA/HQ Lib   1.   Standardize report number/author/corporate
                      name.
                2.   Source of availability - confirmed.
                3.   Add abstracts.
                4.   Keyword searching.

NASA/STIF   1.   Verify that all formal NACA reports are
                      entered.
                2.   Check validity of data.
                3.   Load remaining 25,000 catalog cards.

Redstone SIC   [Substantial comments appended to the
                questionnaire appear at the end of this section]

Stennis SC   1.   Make the rest of the search terminology the
                      same as the rest of RECON.

Other centers:

AEDC   1.   Make the NACA file as much like File D as
                      possible.

CalTech   1.   Complete file not online.
                2.   Not enough access points.
                3.   Subject fields.
                4.   Boolean.

| Douglas | 1. | Consistent subject approach. |
| | 2. | Additional bibliographic data. |

| Nielsen | 1. | Subject access to conform to current thesaurus. |

| NTIS | 1. | Be able to search by NACA report number. |

| Raytheon | 1. | Re-assignment of descriptors to current thesaurus terms. |

| U. of MD | 1. | Put it on Internet so that it could be easily accessed by college and research libraries. |

Q. What evidence can you supply that would warrant making these changes?

[See printouts with the questionnaires which are the Attachment to this report.]

Q: What is your estimate of the cost to your center (if any) of having to search the file in its present form?

NASA and NASA-related centers:

Ames RC	Cost of experienced and persistent librarian labor hours. Still useful; unique records.
Goddard ISS	$8 - $25 per item.
Goddard SFC	None.
JPL	None.
Kennedy SC	0
Langley RC	It is less costly to the LaRC staff to search the card file which is more accurate and complete.
Lewis RC	0
Marshall SFC	Because it is hard to search, we don't use this file very much (and we don't have many requests for NACA material).
NASA/HQ Lib	Time lost in searching due to lack of quality control. Actual hours ?
NASA/STIF	Minimal, real cost incurred in trying to locate physical copy.
Redstone SIC	Unknown.
Stennis SC	No cost.

Other centers:

AEDC	Present NACA Database is much more useful than available printed indexes.
CalTech	Time only - inhouse records available for most requests.
Cubic	None.
FluiDyne	Probably none.

```
NTIS              $400 to $1,000/month.
Raytheon          <$100/year.
```

Q: Any other recommendations for developing and or upgrading the NACA electronic bibliographic records to a level acceptable to users?

NASA and NASA-related centers:

AIAA	Adjusting all records for the true NACA issued items to one standard.
Ames RC	Make as consistent as possible with other files on RECON; make complete; ensure a _clean_ database.
Goddard ISS	Provide citations for items not held by STIF so they can be used to trace elsewhere.
Lewis RC	Consistency in indexing. Conformance to authority files for author, corporate source and report number input.
NASA/STIF	Upgrade the cataloging, make subject headings lists available.

Other centers:

AEDC	Try to fill in the gaps.
NTIS	Be able to order NACAs online from NASA/STIF.
Raytheon	Would any consideration be given to putting the records on DIALOG? (Perhaps added to File 108?)

OBSERVATIONS ON BIBLIOGRAPHIC RECORDS

Since the Langley shelf list file of NACA documents was used by NASA/STIF for the initial development of a NACA Documents Database, the Database includes non-NACA as well as NACA documents.

NASA resources already have been invested in this initial effort to make the NACA bibliographic information available in a timely and cost-effective manner. And, the database is being used.

Users have been (and still are) critical about the initial input to the NACA Documents Database. They want all the information to be available and accessible with quality records - to make it more searchable and, therefore, more useful to them.

Redstone Scientific Information Center offers the following considerations for designing an effective NACA database:

1. RSIC users ask for NACA documents in the following ways:

   a. Most have a citation from a book, journal article, or technical report. This has a personal author (if any), a title and NACA with a report number.

   b. Occasionally will appear from a database; but infrequently; perhaps because the information is not in databases.

2. RSIC users want the full-text; not just citation; and would like the full-text delivered to them in either electronic format or paper copy.

Databases RSIC uses to retrieve material which have NACA citations:

1. NASA/RECON: our "database of choice" for all NASA materials.

   a. When you expand RN/function with all ways to cite NACA reports you get a variety of responses. Expand RN/NACA-1 gets you to the reports that have no alpha prefixes; expand RN/NACA plus an alpha gets you to those that are entered with an alpha prefix. Dashes and spaces are significant in determining if a document exists in the database.

   b. We should be able to search database with NACA and report number as listed in citations; cannot do that effectively now.

   c. You have to search two separate files; in older file there are NACA citations that are not in current file.

   d. In current file if you expand CT/national advisory commi you get 71, 2, 67, 118, 32, and 19 hits signifying different locations for NACA reports.

   e. RSIC staff found no easy way to determine exactly how many NACA reports were in the database.

   f. Only way to verify that NACA record exists in database is if you have personal author and can check that.

2. In the DTIC database, DOD's database of choice, there are 169 finds under NACA. If you examine the records, you find that instead of National Advisory Committee for Aeronautics as a corporate author, National AEronautics and Space

33

Administration is used even for documents in the early 50's. You get no hits if you search NACA as a corporate author.

3. NTIS file 6 in DIALOG lists 101 when you select rn=NACA; a look at the citations indicates that corporate source field uses NASA not NACA as a corporate source because source is DTIC and they have changed all corporate sources to NASA. Most of dates are in 50's earliest date is 1937.

4. Aerospace File 8 in DIALOG lists 245 when you select rn=NACA there are 245 selections with early NACA numbers listed. NACA is also used as corporate source.

RSIC plans for NACA documents available at RSIC:

1. RSIC has the STILAS computer system with an online catalog.

2. RSIC will input its NACA collection into the RSIC database.

3. STILAS software provides for uploading and downloading records into remote databases.

4. NASA Langley has STILAS system also.

5. Capability to upload both RSIC and Langley records into the NASA/RECON database should be explored. Downloading of records from NASA/RECON database will allow creating of local databases and prevent duplicate input of records. Uploading of records into NASA/RECON would distribute workload among participants.

Note: The DTIC Technical Library recently installed the Scientific and Technical Information Libray Automation System (STILAS), which has the unique capability of handling both COSATI-type records and LC MARC-formatted records in a single, integrated database. STILAS users can download citations to their local database from DROLS, NASA/RECON, BRS, DIALOG, and OCLC. (Source: DTIC *Digest*, 91(1):3, January 1991)

DOCUMENT AVAILABILITY AND PRESERVATION

Data were gathered to identify how the centers make NACA documents available to their users, user requirements for NACA availability and delivery, and the potential of assigning responsibility for archival holdings of "last available copies."

SURVEY OF DOCUMENTS AVAILABILITY

The survey on availability collected data on how the centers make NACA documents available and how they obtain them.

Q: How are the NACA collection documents made available to users?

R=Reference use on site
L=Loan inhouse
I=Interlibrary loan
D=Copies made for distribution (no charge)
S=Copies made for sale (fee charged)
O=Other

NASA and NASA-related centers:

	R	L	I	D	S	Other
AIAA	x				x	
Ames Dryden		x	x			
Ames RC	x			x		
Goddard ISS						NASA/STIF copies
Goddard SFC	x					
JPL	x			x		
Johnson SC		x				
Kennedy SC	x	x				
Langley RC	x	x	x	x		
Lewis RC	x			x		
NASA/HQ Lib	x		x	x		
NASA/STIF					x	
Redstone SIC		x	x	x		
Stennis SC				x		
Total	8	5	4	7	2	

Other centers:

	R	L	I	D	S	Other
AEDC		x	x			
Boeing	x	x	x	x		
CalTech	x	x	x		x	
Cubic		x	x			
Douglas	x					Within MDC Corp.
FluiDyne	x	x	x			

	R	L	I	D	S	Other
G. Dynamics	x	x	x	x		
Gulfstream		x	x	x		
LC	x	x	x		x	
Nielsen		x	x			
NIST	x	x	x			
NTIS					x	
Raytheon	x		x	x		
Rockwell		x	x			
TRW		x		x		
Wright Lab	x	x				
U. of MD	x	x	x		x	
Total	10	14	13	5	4	

Q: If copies are distributed or sold, in what formats?

NASA and NASA-related centers:

	Paper	Microform	Other
AIAA	x	x	
Ames Dryden	x		
Ames RC	x		
Goddard ISS	x		
JPL	x	x	
Johnson SC	x		
Langley RC	x	x	
Lewis RC	x		
NASA/HQ Lib	x		
NASA/STIF	x	x	
Redstone SIC	x		
Total	11	4	

Other centers:

	Paper	Microform	Other
Boeing	x	x	
CalTech	x	x	
Cubic	x		
FluiDyne	x		
G. Dynamics	x		
Gulfstream	x		
LC	x	x	
Nielsen	x		
NTIS	x		
Raytheon	x	x	
TRW	x		
Wright Lab	x		
U. of MD	x		
Total	13	4	

Q: If you do not hold the NACA or non-NACA documents needed, what sources do you use to obtain them?

NS=NASA/STIF
NT=NTIS
AI=AIAA
LC=Library of Congress
CT=California Institute of Technology
UP=Updata
O=Other

NASA and NASA-related centers:

	NS	NT	AI	LC	CT	UP	O
AIAA							None
Ames Dryden	x						
Ames RC	x					x	Langley, NASA/HQ
Goddard ISS	x	x	x				ILL (OCLC)
Goddard SFC	x	x	x				Langley
Johnson SC	x						
Kennedy SC	x						
Langley RC	x						
Lewis RC	x						Langley
Marshall SC	x						Redstone
NASA/HQ Lib	x						Langley
NASA/STIF		x					
Redstone SIC	x						Any having them
Stennis SC	x						Langley
Total	12	3	2	0	0	1	9

Other centers:

	NS	NT	AI	LC	CT	UP	O
AEDC	x						ILL (NASA libraries)
CalTech	x	x	x				
Cubic	x						
Douglas					x		
FluiDyne		x					U/Minn., Langley
G. Dynamics							Local libraries
Gulfstream		x					
LC							Refer to others*
Nielsen							NASA/Ames
NIST		x		x			
NTIS	x			x			
Raytheon	x	x					MIT Repro. Lab.
Rockwell	x	x	x	x	x		
TRW	x	x					
U. of MD		x					
Wright Lab.	x						
Total	8	8	2	3	2	0	5

*If the LC Technical Reports Section does not hold a NACA
document that is requested, they do not try to obtain it.
Instead, they refere the requestor to other sources, namely
NASA/HQ Library, Langley Research Center, or Goddard Space Flight
Center.

NACA ARCHIVES

This part of the study looks at the centers as potential
participants in developing a NACA archives program.

Survey Responses

**Q: If you had the last copy of a non-NACA document, would
you be willing to serve as the official archive for that
document?**

NASA and NASA-related centers:

	Yes	No	Comments
AIAA		x	Long term commitments impractical.
Ames Dryden		x	
Ames RC		x	Would send to NASA/STIF to m/f.
Goddard ISS		x	Would send to NASA/STIF to m/f.
Goddard SFC		x	Would send to Langley.
JPL	x		
Johnson SC	x		
Lewis RC	x		
Kennedy SC	x		
NASA/STIF	x		
Redstone SIC	x		
Stennis SC	x		
Total	7	5	

Other centers:

	Yes	No	Comments
AEDC		x	
Boeing		x	
CalTech	x		
Cubic		x	Too many staff cuts.
Douglas	x		
FluiDyne	x		
G. Dynamics		x	Would send to NASA/STIF to m/f.
Gulfstream		x	Would send to NASA/HQ Lib.
LC	x		
Nielsen	x		
NTIS	x		
NIST		x	Would send to NACA depository.
Raytheon	x		

	Yes	No	Comments
Rockwell	x		
TRW		x	
U. of MD	x		
Wright Lab.	x		
	───	───	
Total	10	7	

Q: If yes, would you be willing to make it available? How?

NASA and NASA-related centers:

	Yes	How
AIAA		Photocopy?
JPL	x	
Johnson SC	x	
Kennedy SC	x	Copies
Lewis RC	x	Photocopies (33 pp. or less)
NASA/STIF	x	Reproduction
Redstone SIC	x	Copies mailed, FAX of copies
Stennis SC	x	Xerox copy
	───	
Total	7	

Other centers:

	Yes	How
CalTech	x	Microfiche, photocopying
Douglas	x	Cost of copying
Fluidyne	x	Copies
LC	x	Photocopy
Nielsen	x	Photocopy
NTIS	x	Copies for sale
Raytheon	x	Microfiche
Rockwell	x	Photocopy
U. of MD	x	Interlibrary loan
Wright Lab.		Mail
	───	
	9	

A comment added by the Ames Research Center was that this needs Agency oversight, that it should not be left to future staff at all centers, when training and communication is liable to break down.

Q: What do you consider requirements for a useful NACA archive?

X=FAX   F=Fast
O=Overnight   R=Reasonable
M=Regular mail   W=Whenever you can get it

NASA and NASA-related centers:

	Availability	Delivery X	O	M	Response F	R	W	Other
AIAA	x			x	x			
Ames Dryden	x	x		x	x			
Ames RC	x							
Goddard ISS	x			x	x	x		
Goddard SFC				x		x		
JPL	x	x	x	x		x		
Johnson SC	x			x		x		
Kennedy SC	x	x	x	x		x		Legibility
Langley RC	x			x		x		Onsite
Lewis RC	x	x				x		
Marshall SFC	x				x			
NASA/HQ Lib	x				x			CD/ROM Preservation
NASA/STIF	x			x		x		
Redstone SIC	x	x			x			Full text online & on CD/ROM
Stennis SC	x	x		x		x		
Total	14	6	2	10	6	9	0	5

Other centers:

	Availability	Delivery X	O	M	Response F	R	W	Other
AEDC	x			x		x		
Boeing	x		x	x	x			
CalTech	x		x	x	x	x		
Cubic	x	x	x	x		x		
Douglas	x							As required
FluiDyne	x			x		x		
G. Dynamics	x			x		x		
Gulfstream	x	x	x	x	x	x		
LC	x	x		x		x		
Nielsen	x	x		x		x		
NTIS	x		x	x	x	x		
Raytheon	x	x	x		x			
Rockwell	x	x	x	x		x		
TRW	x	x	x		x			
Wright Lab		x		x	x			
U. of MD	x			x		x		
Total	15	8	8	13	7	11	0	

Comments added by the centers were: Rush when requested (Goddard ISS). Majority of our users need information immediately; cannot wait for days for it (Redstone SCI). Documents too long for FAX

(CalTech). Would want legible, good quality copies (Kennedy SC and TRW).

NASA/STIF

The NASA STI Facility has over 2.6 million documents of worldwide aerospace interest. Current holdings of NACA documents are estimated at 16,000 NACA originated and 15,000 non-NACA documents. Bibliographic records for the NACA collection describe many documents that are not now in the NASA/STIF collection. In other words, there are significant gaps in the collection, especially the non-NACA documents.

The Facility has a complete set of the NACA Annual Reports, which contain full text of all the early official NACA publications. These are in bound volumes on the shelves with other reference materials.

NACA-originated documents published as individual reports are filed on the shelves in the stacks, by series number. Multiple copies of many of the reports are available for distribution on request.

Single copies of some NACA-originated reports are in subject folders, with non-NACA reports and correspondence. These folders are shelved by decimal number and are housed with the non-NACA collection. Individual documents in the folders can be located, but only through the bibliographic records. In a spot check, a NACA-originated report filed in the folder was the only copy held.

Several boxes of NACA publications received by the Facility have not yet been sorted to fill gaps in the collection or dispose of duplicates that are not needed.

When asked if they would be willing to serve as the archive for a non-NACA document if they had the last copy, 16 responded "yes" and 12 responded "no." Of the latter 6 said they would send the document, or a best copy, to NASA/STIF for microfilming and processing.

NASA/STIF is a major source of NACA documents for the aerospace community. Some 92% of the NASA and NASA-related centers and 50% of the other centers surveyed obtain from NASA/STIF any needed NACA documents that are not in their own collections. This clearinhouse function is part of the Facility's mission.

Langley RC

Langley Research Center has 23,000 NACA documents and is a source used by 36% of the NASA and NASA-related centers. None of the other centers surveyed obtain NACA documents from Langley. LC Technical Reports Sections refers users there.

Although it does do so, Langley has no requirement to serve as a documents source for the aerospace community.

NTIS

The National Technical Information Service (NTIS) has 6,300 NACA documents and is a source used by 23% of the NASA and NASA-related centers and by 50% of the other centers surveyed. Through an interagency agreement with NASA, NTIS receives copies of unclassified unlimited reports (and their bibliographic tapes) which are processed by NASA/STIF. NTIS announces these reports and makes them available for sale, indefinitely. However, the microfiche copies received from NASA/STIF are second generation diazo. That means that the subsequent reproduction of microfiche or blowback paper copy to fill orders may lose legibility.

The archival holding of documents in its collection is part of the NTIS mission - to serve as a clearinghouse for scientific and technical information.

LC

The Library of Congress Technical Reports Section has 16,000 NACA documents. Although they have indicated a willingness to serve as the archives for a "last copy" document, non-NACA documents in the LC collection cannot be identified as such. If held, they would be a part of the general technical reports collection.

As a national library, LC is a reliable source. However, none of the NASA and NASA-related centers use LC as a source. Some 19% of the other centers do.

Availability of photocopies through the LC Photoduplication Section is very slow.

NARA

The National Archives and Records Administration has perhaps the most complete collection of NACA publications. How many is not known. Their collection includes the non-NACA reports that were used as reference and resource materials for the official NACA reports.

Although a reliable archives source, access to the documents is difficult. To have access to a specific publication, one needs to know the accession number and location of the box.

o   Boxes are assigned an accession number (i.e., 65A539), sometimes a series number (i.d., Series No. 3), and a location (i.e., Vault 1, Row 5, Section 41, Shelf 7). Frequently several boxes carry the same accession number and the boxes are stored in more than one section, on more than one shelf within the section.

o   Individual reports by title and report number are difficult to identify and/or locate.

Requests for copies of specific documents may be sent in by mail, but NARA's identification of reports and their specific location, as well as the supplying of photocopies, is extremently slow.

Access to view the collection requires a letter from NASA indicating the name of the individual who is to be given access, day and time of the visit, and the specific box or boxes to be viewed.

PRESERVATION OF DOCUMENTS

NACA Technical Reports (TRs) which NACA expected to have lasting value were printed and sold by GPO in order to make them available to the public. Other NACA documents were not expected to have lasting value. Copies generally were mimeographed. Sometimes they had a cardboard cover and sometimes not. The result is that the paper copies of NACA reports are now deteriorating at a rapid rate.

<u>Microfiche</u>

Some NACA documents holdings have been converted to microfiche. Microfilm cannot always be relied upon for archival availability. For example, the Library of Congress says of its NASA documents dating from the 1960's to early 70's:

At present, the reports from N64-18,500 to N73-28,900 are in an advanced state of deterioration. Many of these fiche are warped to the point where they can no longer be used in our reader/printers. The damage seems to progress irreversible, so that in 10 years, 50% of the collection may no longer be usable.

This means that within a 50 year span, many documents that were preserved on microfilm may be "lost."

NASA/STIF converted some NACA documents to microfiche, producing silver halide masters. Updata converted the CalTech collection of NACA documents, also on silver halide masters. Silver halide is more permanent than diazo. However, all copies made from these masters are diazo, which is not permanent. All copies supplied by NASA/STIF and Updata are diazo copies - copies deposited at NTIS and copies distributed to or purchased by libraries.

CD/ROM

CD/ROM provides an archival quality medium for the storage and reproduction of records. Bibliographic records on CD/ROM have been received enthusiastically by users.

The NTIS Bibliographic Database and several others are available on CD/ROM as commercial products.

The Public Printer, speaking at the American Library Association Winter Meeting in Chicago, January 12, 1991, noted that congress was projecting that in 1991 CENSUS would distribute a greater portion of documents in CD/ROM formats, rather than microfiche.

Although recommended in the survey, the suitability of CD/ROM for full-text NACA documents, with graphics and illustrations, needs to be explored further.

Optical disk technology

The Library of Congress has an ongoing program using optical disk technology for the preservation of valuable documents. The feasibility and cost of using this technology for preserving the NACA collection also needs to be explored.

OBSERVATIONS ON AVAILABILITY AND PRESERVATION

Availability and preservation of the NACA collection is as urgent as the development of a "definitive" NACA Documents Database.

Designation or development of a well-preserved collection(s) of NACA and non-NACA documents, easily accessible to the aerospace community, is likely to require a longer range solution.

CONCLUSIONS AND NEXT STEPS

The purpose of this study is to provide an analysis of the NACA collection and its bibliographic records, define the NACA archive, and recommend methodologies for meeting the project objectives. This section offers recommendations for next steps that can be taken to meet the project objectives.

NASA can make the most of what already has been done, involve the user community in further developments, and create a coordinated approach to document availability and preservation, by approaching the project in three phases:

> Phase 1: NACA Bibliographic Records. Bring the quality of the NACA Documents Database to a level acceptable to users and complete the Database.

> Phase 2: Access to Database Records. Develop products/services that maximize use of the Database. This includes developing products/programs to facilitate use of the Database.

> Phase 3: NASA Document Availability. Assure that the documents in the Database are available. This includes establishing archival responsibility and addressing the problem of document preservation.

Phase 1: NACA BIBLIOGRAPHIC RECORDS

Each of the following steps will make the Database more acceptable to users. However, each successive option carries increased costs which can be significant. Most of the steps will require a cooperative effort between NASA/HQ and the NASA Centers. This will telescope the time required to implement the step and share costs in terms of staff hours and other resources.

Step 1: Make best use of the current file.

Rationale: Retrofitting the current file to conform to the expressed needs of the centers will take time. It has been my experience that users are less inclined to be critical and more accepting of a product or process if (a) they understand why and how it was developed, (b) they are adequately informed about its "quirks" so they can use it effectively, and (c) they feel that they have been heard when they provide feedback.

> a. Provide user information, with projects such as the following:

o <u>A users manual</u>. Explain why the NACA Database was set up the way it is, what makes it different from the regular NASA/RECON files, and how to get the most out of searching it online.

o <u>NACA subject headings list</u>. Publish the list and make it available to users.

o <u>Online "hot line"</u>. Establish a contact point at NASA/STIF so users can get information about the file and offer suggestions.

o <u>Presentations at meetings</u>. Make presentations at meetings, such as the Aerospace Division's programs at the SLA Annual Conference, to impart information about the Project, respond to questions, and gather user feedback.

b. <u>Upgrade the records</u>.

o <u>User requirements</u>. Based on user requirements, define quality records for the Database records and adopt this definition as a standard for all input.

o <u>Error correction</u>. Develop a procedure for correcting errors in the present file, when they are reported by users.

o <u>Subject enhancement</u>. Explore feasibility of machine-aided indexing to enhance the present subject terms with terms compatible with current indexing in NASA/RECON.

<u>Step 2: Acquire missing bibliographic information</u>.

<u>Rationale</u>: A number of NASA centers have indicated a willingness to contribute records, staff time, and expertise toward improving the NACA Database. This cooperation should be used to help create "quality records" in the NACA Database and to maximize user acceptance. Ways in which this can be done include:

a. <u>Develop a bibliographic acquisition plan</u>. Prepare a draft plan for acquiring records to complete the NACA Document Database. Consider the following options to involve the centers:

o <u>NACA bibliographies</u>. Comb through all the known bibiographies that contain citations to NACA publications. Identify those which are not in the database and capture the bibliographic information.

o <u>NACA Document Database Network</u>. Based on the
success of the DTIC Shared Bibliographic Input Network,
shared-cataloging and identification of holdings is a
viable option. Shared input by the NASA centers would
decentralize the costs and manpower effort required to
complete the database. It also would speed the
timetable for completion.

> o <u>Obtain cooperation of centers</u> to take part in
> the network.
>
> o <u>Draw up procedures and define responsibilities.</u>
> This includes central responsibility at NASA/STIF
> and input from centers. It also includes
> procedures for the use of PC diskettes, batch
> bibliographic tapes, and online electronic
> transmission.
>
> o <u>Provide for quality control</u> of records. This
> includes using the indexing standards of
> NASA/RECON and central control over duplication
> and/or variances in records.
>
> o <u>Tag</u> the bibliographic records, to identify
> holdings - who has what, the availability of
> copies, and the archival responsibility.

o <u>NACA documents at NARA</u>. Contract an effort to
identify the titles of NACA documents in the holdings
of the National Archives and Records Center.
Investigate use of the following:

> o <u>Hand-held scanner</u>. The scanner could be used
> to capture essential information from the title
> page of each NACA document in the NARS collection.
>
> o <u>Lap-top computer</u>. A knowledgeable indexer
> could work at NARS to input quality records on a
> lap-top, working from the documents.

b. <u>Implement the plan.</u> Develop a time-table and take steps
necessary to carry out the plan.

Phase 2: ACCESS TO DATABASE RECORDS

<u>Step 1: Explore the feasibility of a distributed NACA Network</u>.

<u>Rationale</u>: A network in which each of the centers is linked
electronically will enable users to have access to information
located at each center. The distributed Network (whose purpose
is to enhance access to NACA bibliographic records and documents)

will complement the centralized Network described above (whose purpose is to upgrade the records and get all the records online).

    a. Conduct a study on available options for linking the NASA centers electronically. Include exploring the feasibility of the following:

        o NACA bulletin board. Link the centers with an electronic bulletin board.

        o Online access. Providing remote online access to local automated systems.

    b. Solicit the cooperation of the centers. Encourage them to discuss the options and get involved in the planning.

Step 2: Produce a CD-ROM version of the NACA Documents Database.

Rationale: After the Database is completed, this by-product will enhance access and use of the Database records within the aerospace community.

    a. Publish a limited version. This will contain full records but availability will be limited to authorized users.

    b. Publish an unlimited version. This will contain only unclassified and unlimited records. It will be available worldwide to the aerospace community as well as to all other interested users.

Step 3: Explore the feasibility of producing full-text on CD-ROM.

Rationale: Users have asked for this, including a user-friendly access/search feature. This will include exploring the problems and identifying solutions for capturing graphs and illustrations as well as text on CD-ROM.

Phase 3: NACA DOCUMENTS AVAILABILITY

Step 1: Acquire and hold a complete set of official NACA documents at NASA/STIF.

Rationale: Most of the centers surveyed rely on NASA/STIF as their source for NACA documents. Many of the centers do not hold complete collections and three of the centers hold none at all.

a. **Unpack and inventory the boxes** of NACA documents that NASA/STIF holds in temporary storage and fill in items now missing from the collection.

b. **Obtain duplicate copies of the NACA Annual Reports** which contain all the early technical reports.

    o Solicit duplicate copies from the Centers.

    o Remove the bindings from the Annual Reports to separate the individual reports.

    o Bind, catalog, and shelve the individual reports as part of the NACA documents collection.

c. **Encourage centers which plan to dispose of NACA collections** to send a list to NASA/STIF for review. These center include the University of Maryland Technical Reports Section and the Gulfstream Aerospace Corporation.

d. **Acquire copies of NACA documents still missing.**

    o Distribute the list of missing items among the centers surveyed.

    o Ask to receive an original or a high-quality copy, if a center can supply a missing report.

Step 2: Assure that all documents in the NACA Documents Database are available.

Rationale: This is what several of the centers have asked for.

a. **Consider purchasing the Updata microfiche** collection, if it can be supplied to NASA/STIF in silver halide format.

b. **Identify in the Database the source of availability** for each document.

c. **Provide a back-up source of availability** by sending NTIS microfiche of all unclassified/unlimited NACA documents.

Step 3: Assign archive responsibility for the holding of non-NACA documents.

Rationale: Non-NACA documents are difficult to locate and acquire once they have been identified.

a. **Draw up a plan with the NASA centers which are willing to accept archive responsibility for specific non-NACA reports.**

b. Consider negotiating with the British Library for them to be responsibile for access to all foreign non-NACA documents.

Step 4: Take steps necessary to assure preservation of the documents.

Rationale: Paper copy and old microforms are rapidly deteriorating. Preservation is required to assure accessibility.

    a. Explore methods of document preservation, for the NACA archive collection.

        o Investigate conversion to CD/ROM.

        o Investigate use of optical disc technology.

    c. Develop a time-phased preservation plan which includes method(s) to be used, the cost, and who will be responsible for the implementation.

The value of the NACA Documents Database Project is reflected in these comments from the centers:

We have daily requests - the entire span. (California Institute of Technology)

NACA materials are crucial to understanding post WWII developments in rocketry space science and American political development. (Goddard Institute of Space Studies)

The NACA collection is a very valuable set of early aeronautical literature. It contains basic information that continues to be useful. The entire set should be carefully entered in an online database and copies of the documents should be available. (AEDC Technical Library, USAF)

BIBLIOGRAPHY

THE AERONAUTICAL INDEX FOR 1938. New York, Federal Works Agency, Work Projects Administration, City of New York, 1939.

> Issued in cooperation with the Institute of the Aeronautical Sciences. The list includes the titles of periodicals in which a substantial number of aeronautical articles have been found and indexed. It also includes NACA Technical Memorandums (TMs), Technical Notes (TNs), and Technical Reports (TRs).

THE AERONAUTICAL INDEX FOR 1939. New York, Institute of the Aeronautical Sciences, 1943.

> A subject and author index to aeronautical periodicals and technical reports, including citations for NACA reports. Compiled by the Division of Aeronautics, Library of Congress.

BIBLIOGRAPHY OF AERONAUTICS - 1931, by Paul Brockett. Washington, DC: Government Printing Office, 1935.

> Covers the aeronautical literature published in 1931. The first of this series was published by the Smithsonian Institution in 1909. In subsequent years it was published by NACA. The arrangement is by author and subject in one alphabetical sequence. It includes NACA citations.

INDEX OF NACA TECHNICAL PUBLICATIONS, 1915-1949. Washington, DC: National Advisory Committee for Aeronautics, 1949. Supplements to 1962.

> NASA/STI Facility has a set. It is arranged by subject. A separate author index refers to page numbers in the Index. No report numbers are included in the citations.

NASA Memorandum to NASA Headquarters, Attn: NTT/Ms. Gladys A. Cotter, Director, Scientific and Technical Information Division [and] Langley Research Center, Attn: 185/Ms. Jane S. Hess, Technical Library Branch, from NTD-1/NASA Records Officer, on "Transfer of National Advisory Committee for Aeronautics (NACA) Records 1917-1962," dated Jun 1, 1990.

> Enclosures list documents by NACA number.

AN OPERATIONAL SYSTEM FOR SUBJECT SWITCHING BETWEEN CONTROLLED VOCABULARIES: A COMPUTATIONAL LINGUISTICS APPROACH, by June P. Silvester, Roxanne Newton, and Paul H. Klingbiel. NASA Contractor Report 3838. Washington, DC: NASA, 1984.

Prepared for NASA by Planning Research Corporation, McLean, Virginia. The NASA Lexical Dictionary (NLD) is a system that automatically translates input subject terms to those of NASA.

SPECIAL STUDY ON THE RECORDS OF THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS. Washington, DC: General Service Administration, National Archives and Records Service, July 1972.

Contains a historical introduction and a description of the various NACA series.

APPENDIX A: **DEFINITIONS**

NACA: The National Advisory Committee on Aeronautics, which existed between 1915 and 1958 and was the predecessor of NASA.

NACA document: Any document produced by and/or for NACA. This includes the following series:

> Aircraft Circulars (AC) - Mimeographed reports about foreign aircraft and engines. Each circular contains abstracts taken from aeronautical magazines and deals with one kind of airplane.

> Research Authorizations (RA) - NACA Form 18, which briefly describes the title of the research, agency requesting it, laboratory doing the investigation, its purpose, and a brief description of the method employed. RAs generally terminated in the issuance of one of several NACA publications.

> Research Memorandum (RM) and Memorandum Reports (MR) - Issued to give limited distribution to certain security classified items of information. Some were "abandoned" or "rejected" or stamped "Inactive status."

> Technical Memorandums (TM) - Generally mimeographed with a cardboard cover, TMs are foreign language research reports which were translated into English.

> Technical Notes (TN) - Preliminary or narrow-in-scope reports, usually mimeographed. A TN might have its beginning in an earlier study issued by a university or a private laboratory.

> Technical Reports (TR) - Comprehensive presentations that NACA expected to have lasting value. They were printed and sold by GPO in order to make them available to the public.

> Wartime Reports (WR) - Reprints of NACA papers issued to provide rapid distribution of advance research results to authorized groups. They are memeographed copies of security classified NACA papers, most of which were declassified and issued as WRs between 1946 and 1952. They have an alphabetical letter before the number to indicate the laboratory that did the investigation:

>> A = Ames Aeronautical Laboratory
>> E = Aircraft Engine Research Laboratory (in 1948 redesignated Lewis Flight Propulsion Laboratory)
>> L = Langley Memorial Aeronautical Laboratory
>> W = Non-NACA laboratories

<u>Non-NACA document</u>: Any document held by the NACA
library/libraries during the period 1915 to 1958 other than NACA
documents. These include:

>Reference documents - Reports, studies, publications,
>scientific papers, etc. pertaining to aeronautical subjects.
>They were prepared by official military and civilian
>agencies, by research institutions and universities, and by
>airplane manufacturers - both in the U.S. and foreign
>countries. These documents were assigned NACA "N" numbers.

>Research documents - Documents on all aspects of
>aeronautical development, including foreign reports (and
>English translations), NACA Paris Office reports on European
>developments, reports of U.S. Government agencies
>responsible for aeronautical development, and reports of
>contractors engaged in research, development, and production
>of U.S. airplanes. These documents were assigned a
>numerical code, such as A1000/102.

<u>NACA collection</u>: The NACA and non-NACA documents taken together.

<u>NACA database</u>: The database containing bibliographic (i.e.,
surrogate) records of the NACA collection. The database is
composed of two datasets: bibliographic records of NACA
documents and bibliographic records of non-NACA documents.

<u>NACA archive</u>: The extant paper, microform or other media copies
of the documents in the NACA collection.

APPENDIX B: **LIST OF CENTERS SURVEYED**

SURVEY OF CENTERS
Part 1

The survey of centers was conducted in two parts. The first part
was conducted among the NASA research centers, relevant NASA
partners (AIAA, NASA/STIF, and NTIS), and selected other
organizations with holdings of NASA documents.

NASA Centers

AMES RESEARCH CENTER
Moffett Field, CA   94035
      Mary Walsh
      Acting Chief, Library Branch
      (415) 604-5000 x-5157

DRYDEN FLIGHT RESEARCH FACILITY
Ames Research Center
P.O. Box 273
Edwards, CA   93523
      Karen Puffer
      Librarian
      (805) 258-3311 x-3127

GODDARD INSTITUTE FOR SPACE STUDIES
2880 Broadway, Room 710A
New York, NY 10025
      David Purdy
      (212) 678-5613

GODDARD SPACE FLIGHT CENTER
Greenbelt, MD   20771
      Janet Ormes, Head
      Library Services Branch
      (301) 286-2000 x-6728

      Jane Riddle
      Reference Librarian
      (301) 286-2000 x-9161

JET PROPULSION LABORATORY
Library
Mail stop: 111-113
4800 Oak Grove Drive
Pasadena, CA   91109
      Adel Wilder
      Manager, Library
      (818) 354-4321 x-3007

Judy Castagno
Supervisor, Information Services

LYNDON B. JOHNSON SPACE CENTER
Houston, TX 77058
    Donna McAllister
    Technical Library
    (713) 483-0123 x-6144

    Laura Chin
    Supervisor, NASA/RECON Assistance
    (713) 483-0123 x-4248

JOHN F. KENNEDY SPACE CENTER
Mail code: SI-SAT-5
Kennedy Space Center, FL 32899
    Bill Cooper
    Chief Librarian
    (407) 867-3615

    Donna A. Atkins
    Head Documents Librarian

LANGLEY RESEARCH CENTER
Technical Library
Mail stop: 185
Hampton, VA 23665-5225
    George Roncaglia, Head
    Technical Library Branch
    (804) 928-2000 x-2374

    Carolyn Floyd
    (804) 864-2381

NASA LEWIS RESEARCH CENTER
Mail stop: 60-1
2100 Brookpark Road
Cleveland, OH 44135
    Dick Texler, Chief
    Technical Information Services Division
    (216) 433-4000 x-5980

    Leona T. Jarabek
    Chief, Library Branch
    (216) 433-4000 x-5767

MARSHALL SPACE FLIGHT CENTER
Mail code: CN-22
Marshall Space Flight Center, AL 35812
    Deborah Wills
    Librarian
    (205) 544-4524

NASA HEADQUARTERS LIBRARY
Federal Building 10B
Mail code: DBD-3
600 Independence Avenue SW
Washington, DC   20546
      Joe Langdon
      Head, S&T Library
      (202) 453-8545

JOHN C. STENNIS SPACE CENTER
NASA Library
Bldg. 110, Room 170S
Stennis Space Center, MS   39529-6000
      Hannah Cake
      Chief Librarian
      (601) 688-2187

NASA Related Centers

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS (AIAA)
555 West 57th Street (12th Floor)
New York, NY   10019
      Patricia Marshall
      Director (Library Resources)
      (212) 247-6500

NASA SIENTIFIC AND TECHNICAL INFORMATION FACILITY (NASA/STIF)
P.O. Box 8575
BWI Airport, MD 21240
      Dian A. Marincola
      User Services Section
      (202) 621-0100 x-150 or
      (301) 859-5300 x-150

REDSTONE SCIENTIFIC INFORMATION CENTER
Redstone Arsenal, AL   35898-5241
      Sybil Bullock, Director
      (205) 876-3251

Survey of Selected Others

BOEING COMPANY SUPPORT SERVICES
Renton Technical Library
Mail stop: 6H-LC
P.O. Box 3707
Seattle, WA   98124-2207
      Corinne Campbell
      (206) 237-2445

      Sarah Cannon

Information Services Librarian

CALIFORNIA INSTITUTE OF TECHNOLOGY
Aeronautics Library
Mail code: 205-45
Pasadena, CA 91125
    Virginia (Jean) Anderson
    Aero Librarian
    (818) 356-4521

HUGHES AIRCRAFT COMPANY*
Company Technical Documents Center
P.O. Box 902
Bldg. E1, Mail station: E110
El Segundo, CA 90245-0902
    Dorothy Webb
    (213) 616-0412

LIBRARY OF CONGRESS
LC/SCI/Technical Reports Section
Washington, DC 20540
    John Fuelner
    Head, TRS
    (202) 707-1223

MIT LINCOLN LABORATORY*
Library A-082
244 Wood Street
P.O. Box 73
Lexington, MA 02173-9108
    Robert Siedel
    (617) 981-2511

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)
Information Resources and Services Division
Admintrative Building E-127
Gaithersburg, MD 20899
    Sami Klein
    Chief, RIS

    Marietta Nelson
    Librarian, RIS
    (301) 975-3055

NATIONAL TECHNICAL INFORMATION SERVICE
5285 Port Royal Road
Springfield, VA 22161
    Fran Roberts
    Program Management & Acquisition
    (703) 487-4634

    Bonnie Patello

Information Section
(703) 487-4783

UNIVERSITY OF MARYLAND
Technical Reports Center
Engineering and Physical Sciences Library
College Park, MD 20742
        Gloria Chawla
        Librarian
        (301) 405-9159

*All centers in this part of the survey were called in advance
and agreed to fill out the survey form. Those starred (*) did
not return it.

SURVEY OF CENTERS
Part 2

The second part of the survey of centers was conducted among
selected members of the Special Libraries Association Aerospace
Division whose libraries hold significant numbers of aerospace
documents and who are authorized users of NASA/RECON.

AEDC TECHNICAL LIBRARY (USAF)
Mail stop 100
Arnold AFB, TN   37389
        Gay Donnell Goethert
        (615) 454-4429

        Effie Boyd
        Technical Librarian (Reports)

AEROSPACE CORPORATION**
Charles C. Lauritsen Library
Mail station M1/199
P.O. Box 92957
Los Angeles, CA   90009-2957
        Susan B. Crowe
        (213) 226-6738

CUBIC DEFENSE SYSTEMS, INC.
Technical Library
P.O. Box 85587
San Diego, CA   92138-5587
        Kathy Cook
        Manager, Technical Library
        (619) 277-6780 x-2326

FLUIDYNE ENGINEERING CORPORATION

5900 Olson Memorial Highway
Minneapolis, MN 55422
     Marlys J. Johnson
     Technical Librarian
     (612) 544-2721

GENERAL DYNAMICS CORPORATION
Convair Division
Research Library
Kearny Mesa Plant
Mail Zone: Research Library MZ 40-6540
P.O. Box 85357
San Diego, CA 92123
     Robert E. Arndal
     Chief Librarian
     (619) 547-4876

GULFSTREAM AEROSPACE CORPORATION
Corporate Library D-04
Travis Field
Savannah, GA 31402-2206
     Sandra Hayden-Henry
     Corporate Librarian
     (912) 964-3291

HERCULES AEROSPACE**
Library Mail stop H
P.O. Box 98
Magna, UT 84044
     Cathleen F. Partridge
     (801) 251-2544

LOCKHEED MISSILES AND SPACE COMPANY, INC.**
Technical information Center, O/90-11 B/201-2
3251 Hanover Street
Palo Alto, CA 93204-1187
     A. L. Bryant
     (415) 424-2807

LTV MISSILES AND ELECTRONICS GROUP**
Library EM-08
P.O. Box 650003
Dallas, TX 75265-0003
     Sherry L. Daniel
     (214) 266-7155

MARTIN MARIETTA ASTRONAUTICS**
Library B9265
P.O. Box 179
Denver, CO 80201
     Ellie Reiter
     (303) 977-6363

MCDONNELL DOUGLAS SPACE SYSTEMS CO.**
Library A3-135 M/S 10-2
5301 Bolsa Avenue
Huntington Beach, CA   92647
        Grace C. Lo
        (714) 896-2631

NIELSEN ENGINEERING AND RESEARCH, INC.
510 Clyde Avenue
Mountain View, CA   94043-2287
        Judy A. Faltz
        Library Manager
        (415) 968-9457

RAYTHEON COMPANY
Missile Systems Laboratory Library
50 Apple Hill Drive
P.O. Box 1201
Tewksbury, MA   01876-0901
        Lorraine K. Gregoire
        Manager
        Technical Information Services Dept.
        (508) 858-4705

ROCKWELL INTERNATIONAL CORPORATION
Rocketdyne Division
Attn: TIC D/586183, BA29
6633 Canoga AVenue
Canoga Park, CA   91303
        Julia Keim
        Manager
        (818) 710-3981

ROHR INDUSTRIES, INC.**
Corporate Library
P.O. Box 1516
Chula Vista, CA   92012
        Richard J. Tommey
        (619) 691-3010

TRW INC.
Electronics and Defense Sector
Technical Information Center, S/1930
One Space Park
Redondo Beach, CA   90278
        Gayle A. Berry
        Library Supervisor
        (213) 812-4189

WRIGHT RESEARCH AND DEVELOPMENT CENTER
WRDC/ISL Library

Bldg. 22, Area B
Wright Patterson AFB, OH 45433-6523
     Carolyn Ray
     (513) 255-7454

     P. Switzer, Librarian
     Wright Laboratory Technical Library

     M. Kline
     Reports Technician

Note: Centers in the second part of the survey were not called
in advance. Those with the double asterisk (**) did not return
the survey.

APPENDIX C: **SURVEY INSTRUMENT**

The following instrument was used to collect data from NASA centers, NASA-related centers, and selected other centers and libraries:

NACA DOCUMENTS DATABASE PROJECT

SURVEY OF CENTERS
Part 1

The NACA Documents Database Project has a twofold purpose:

1. Develop a definitive bibliography of NACA produced and/or held documents.

2. Make that bibliography and the associated documents available to the aerospace community.

Data for this Project will be gathered in a survey of centers with significant NACA holdings and/or databases. As one of these centers, you are asked to provide the information requested below. Please either bring it with you when you attend the STI Program Coordinating Council Meeting being held to discuss the NACA Project user requirements, on February 7, 1991, at NASA/HQ-NTT, Conference Room, Suite 1300, Crystal Gateway 2, Arlington VA - or - submit responses to: Ruth S. Smith, 5304 Glenwood Road, Bethesda, MD (301/654-3697), before February 1.

NACA Collections

A. The following data will help to determine who has what and if it is available.

HOLDINGS

1. How many <u>NACA</u> (originated) documents does your center/library hold? (Be as specific as possible)

_____ NACA documents

2. How many <u>non-NACA</u> documents from the NACA collection does your center/library hold? (Be as specific as possible)

_____ non-NACA document

3. In what form are they held:

NACA
[ ] Paper copy _____%
[ ] Microfiche _____%
[ ] Other
_____ _____%

non-NACA
[ ] Paper copy _____%
[ ] Microfiche _____%
[ ] Other
_____ _____%

BIBLIOGRAPHIC RECORD

4. Does your library have bibliographic records for those documents?

NACA documents   [ ] yes   [ ] no
Non-NACA documents [ ] yes   [ ] no

5. In what format are your center/library's bibliographic records?

[ ] Card catalog
[ ] Inhouse automated system
    [ ] Online   [ ] Printout
    [ ] Magnetic tape   [ ] PC diskettes
    [ ] Other (specify) _____

6. Would you be willing to make your bibliographic records available for a NACA Documents Database?

[ ] Yes   [ ] No

7. If yes, could they be supplied in machine-readable form?

[ ] Yes   [ ] No

8. What cataloging standards were used to create your bibliographic records?

[ ] NASA/RECON guidelines
[ ] Other COSATI-based guidelines
[ ] MARC/AACR/AACRII rules
[ ] Other (specify _____

9. How many times a month does your staff search the NACA documents bibliographic records?

[ ] None   [ ] 20 to 50
[ ] 1 to 20   [ ] mor than 50

DOCUMENTS AVAILABILITY

10. How are the NACA collection documents made available to users?

    [ ] Reference use on site   [ ] Other _____
    [ ] Loan inhouse
    [ ] Interlibrary loan
    [ ] Copies made for distribution (no charge)
    [ ] Copies made for sale (fee charged)

11. If copies are distributed or sold, in what formats?

    [ ] Paper
    [ ] Microform
    [ ] Other _____

12. If you do not hold the NACA or non-NACA documents needed, what sources do you use to obtain them? (be specific)

    [ ] NASA STI FAcility
    [ ] NTIS
    [ ] AIAA Library
    [ ] LC Technical Reports Section
    [ ] California Institute of Technology
    [ ] UPDATA
    [ ] Other _____

User Requirements

B. The following data will help to determine user requirements for a definitive NACA Document Database.

BIBLIOGRAPHIC RECORD

13. What basic elements do you consider essential to create a useful NACA Document Database? (specify)

    [ ] Corporate author
    [ ] Title
    [ ] Report number
    [ ] Report date
    [ ] Other (list them)

          _____
          _____
          _____
          _____

14. What cataloging standard/guidelines do you recommend be used to create the NACA Documents Database?

_____

15. What time span is of greatest interest?

[ ] 1915 to 1920   [ ] 1940 to 1950
[ ] 1920 to 1930   [ ] 1950 to 1960
[ ] 1930 to 1940   [ ] after 1960

16. What do you consider the optimal media for dissemination of bibliographic information?

[ ] Online services   [ ] CD/ROM   [ ] Printed indexes
[ ] Other _____

17. In regard to the NACA documents records already online on NASA/RECON, how would you like this file changed? Number each of the changes recommended, beginning with 1 for highest importance, to give them an order of priority.

                                                      Number
a. _____
b. _____
c. _____
d. _____

18. What evidence can you supply that would warrant making these changes? (Provide examples, ie. specific errors, etc., if possible. Attach a sheet, if necessary.)

19. What is your estimate of the cost to your center (if any) of having to search the file in its present form?

20. Any other recommendations for developing and or upgrading the NACA electronic bibiliographic records to a level acceptable to users?

NACA Archives

C. The following data will help to determine archival availability of the NACA collection.

21. What do you consider requirements for a useful NACA archive?

[ ] Document availability
[ ] Document delivery methods (specify)
    [ ] FAX   [ ] _____
    [ ] Overnight delivery   [ ] _____
    [ ] Regular mail   [ ] _____

[ ] Response time
            [ ] Fast
            [ ] Reasonable
            [ ] Whenever you can get it
    [ ] Other _____

22. If you had the last copy of a non-NACA document, would you
be willing to serve as the official archive for that document"

    [ ] Yes   [ ] No

23. If yes, would you be willing to make it available? How?

    [ ] Yes   [ ] No
    _____

OTHER COMMENTS

                        Center name: _____

                        Information supplied by:

                        Name: _____

                        Title: _____

                        Date: _____

SURVEY OF CENTERS
Part 2

NACA DOCUMENTS DATABASE PROJECT

Data is being gathered from centers with significant NACA
holdings and/or databases. You are invited to provide input by
filling in the information requested below and sending it to:
Ruth S. Smith, 5304 Glenwood Road, Bethesda, MD 20814 (301/654-
3697) before February 1.

[The Part 1 survey instrument was used, with the exception that
all references to the non-NACA documents were removed.]

NASA SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM
COORDINATING COUNCIL
MEETING

Thursday, February 7, 1991

NASA/Headquarters/STI Division
Conference Room
Crystal Gateway #2, Suite 1300
Arlington, Virginia

Proceedings

The NASA STI Program Coordinating Council met to discuss the NACA Documents Database Project. Some 34 individuals attended (list attached).

WELCOME AND INTRODUCTION

WELCOME. (Gladys Cotter, Director, STI Division, NASA/HQ-NTT) A plan is needed to be put into place so we can do something good for the people who want to use our information. I hear at user meetings that everyone uses the NACA documents and would like to have them available in a more efficient manner and that the documents themselves are deteriorating and we need to save them. This is an area where we can do something. First, we have to figure out the scope of the problem to determine the scope of the challenge. Ruth Smith is going to lead a study to do that for us. Then, a plan of action will be put into place to actually do something. We should at least focus on short term solutions so something is out there that can be used in the next year. Then we want to deal with the longer term issue of how to preserve the documents so they do not turn to dust in our collections and archives.

NACA DOCUMENTS DATABASE PROJECT. (Barbara Everidge, Project Manager, NASA/NTT) This is the first STI Program Coordinating Council meeting at which representatives from the Centers have been present. These meetings are very open, very free-form forum for discussion. The NACA project is expected to last a year and user input will continue to be gathered.

The Statement of Work (SOW) outlines the NACA project as a whole and underscores the work that Ruth Smith is doing for us. The purpose of the project is twofold: (1) To develop the definitive bibliography of NACA produced and/or held documents and (2) to make that bibliography and associated documents available to the aerospace community.

When we started looking into this problem, estimates were there are between 13,000 to 25,000 NACA documents and between 75,000 and 125,000 reports not produced by NACA but held in the NACA library. Different groups hold NACA collections and the overlap is not known. To develop a bibliography and provide the documents, this initial study will identify who has what, how many citations for the NACA collection are in machine-readable form, and whether those records are according to any standard.

There has been a lot of discussion about the NACA database that is up on RECON, that it is less than optimum quality. There are cards at the Facility that have never been put into the database. Feedback is solicited on what can be done to bring it up to a standard that would serve the users.

Included in the Statement of Work are definitions for the NACA Project. A NACA Document is one produced by or for NACA (in other words something that says NACA on the cover). A non-NACA document is one held by a NACA library but not produced by NACA. The two together form the NACA collection. The NACA archive refers to the documents themselves rather than their bibliographic surrogates.

A number of people in the Division have an interest in this project. John Wilson is interested in getting the electronic database completed. Dick Tuey and Tom Lahr are interested in getting the CD-ROM product out. Kay Voglewede is interested in the archive, where the documents are, and how they can be available to users. All these concerns are pulled together in this NACA Documents Database Project.

The requirements in the Statement of Work are for the entire project, not necessarily for the work Ruth Smith is doing. She will do an analysis of where we stand now and will give us some direction toward meeting the requirements, with recommendations as to how we should proceed to get there. Although the SOW says the study will be finished the 28th of February we expect it to go on into March and perhaps even April.

STUDY PLAN. (Ruth Smith, Consultant) A study plan has been developed. One of the first actions in the plan is to complete a survey of the centers, to find out who has what, where it is, how available it is, and so forth. Then, in working with Patt Sullivan to set up this meeting, I was asked to suggest topics that those who planned to attend should be prepared to discuss. It occurred to me that the two fit together. What began as an informal list of questions to be discussed at the meeting was expanded into the questionnaire used in the survey of centers. The questionnaire was a wonderful way to collect data in a consistent way so it could be compared. The centers have been most cooperative, most helpful, and very responsive.

In addition to all the NASA centers and the NASA-related centers
(the Facility, AIAA, and Redstone SCI), I sent the questionnaire
(or a similar one) to a number of centers which are not NASA
related but have access to the NASA/RECON. This included
commercial contractors, such as General Dynamics and Raytheon,
and universities. CalTech (California Institute of Technology)
reports they have all the NACA documents. If they do, my job
will be a lot easier than I thought it was going to be.

The survey also looks at user requirements for the bibliographic
database. Marvelous comments and suggestions have been received.
It will be fun to share this with NASA when the final report is
put together.

Another part of the survey deals with the NACA archive.
Considerations are how to identify archival responsibility and
whether the archive should be in one place or distributed. It
has been interesting to go through a report about NACA holdings
issued by the National Archives and Records Center in 1972.
Documents at the Archives cannot be identified individually. You
have to know the box number, the series number, and location.
Theirs is probably the most complete collection, but it is very
difficult to identify and obtain access to the documents. That
is another challenge.

I want to say thank you for the response that you have given me
in this survey. A few more responses are expected, particularly
from the commercial centers. Then, I should have a summary
finished soon. The final report is to be submitted by the end of
March, but it should be finished before that time. With the help
and cooperation of you all, it will be.

NACA BIBLIOGRAPHIC RECORDS

AIAA STUDY. (Irene Bogolubsky, Senior Director (Technical),
AIAA) I have four viewgraphs to discuss. Basically, they are:
a definition of the NACA collection, the value of the NACA
collection, the issues that our study has raised, and what should
be done.

The NACA historical file can be divided into three distinct
parts: the NACA formal series, the non-NACA formal series, and
the purely historical material. The formal NACA series are the
TMs, the TRs, the RMs and so forth. The non-NACA formal series
are technical reports from a variety of countries - England,
France, Italy, Scandinavia, etc. The historical material
consists of a variety of things, such as the Bureau of Standards
Bulletin (simply a list of instruments for measuring that were
used in the first quarter of 1918).

There is no question that the NACA collection is valuable. Our library has continuous demand for this material. People want it. They need it. Users in the aerospace community say this material is of considerable value because "air is still air" and the formal NACA series represents relevant basic research.

As for completeness of the collection, no one knows the exact size of the formal NACA series. It is very important to have accessibility to the original documents. They are needed to update the records that already are in the file and correct inconsistencies in those records. This requires access to the original documents if all that is available is a catalog card.

Records already in the file are difficult to search. The number of fields in each of these records is limited. Because of this, certain fields or certain elements of the record contain such a multitude of information that it is difficult to search.

In our library people ask for these reports in different ways. They may ask by a number, the author, the title, etc. That is why it is so important to have all that information there, complete and accurate. For example, I found five or six variations of how a TN is cited - sometimes it is technical note (spelled out) and sometimes T.N., etc. Also, the records are not according to the NASA thesaurus. I am not saying that the subject terms used should be eliminated. They should be retained, but it would be helpful if the records were indexed according to the current thesaurus. Records should be completed and standardized for better access.

The NACA file would be given visibility and better use if it were added to the Aerospace Database. Everybody says we want the material, it is current, it is pertinent, we want to use it. Based on user feedback, it is the NACA proper portion that is the most valuable.

For the future, to save it and to make it accessible in a format that is not going to deteriorate, use CD-ROM. CD-ROM should have the bibliographic information, so searching would be feasible, enhanced by full-text microfilm or full-text on CD-ROM. However, microfiche has a limited life.

Before any kind of work is done on this, responsibility should be assigned to specific individuals who are better qualified in certain areas. A schedule should be established. Standards should be decided upon. A style manual should be made and everybody who is using this material or is providing service should participate in preparation of that. Otherwise, time and money can be wasted.

Discussion:

Value of the collection: CalTech has about 20 requests per week for NACA documents. Users request them from a citation copied from a journal, a technical report, etc.

Subject cataloging: Subject terms that were on the Langley cards are the ones that were keyed to form the current NACA Database. The Facility is developing a Machine Aided Indexing (MAI) program. It can take a phrase or a sentence and parse it so it understands what the sentence is saying select unit terms. It reads the whole sentence and picks out words depending on how they relate to other words. Sometimes you do get garbage, so you have to do a post-MAI edit. It gives you a starting place.

In September 1949, they changed the NACA subject categories. They issued a notice telling everyone saying go back and redo all the catalog cards. Not everyone did. So, you might have a division using one authority list and another using another, but Langley has those authority lists. Langley took over the cataloging in 1947 from Headquarters and has a lot of information that can assist in the MAI effort.

Electronic records: A contract is in place at Redstone to begin putting their documents records into electronic format this summer, using the STILUS system. Langley also is using this computer software. Redstone already inputs cataloging records into DTIC using their standards, and needs to learn how to do it for NASA, since they support both Marshall Space Flight Center and the Army and want to do but one time. They are willing to participate in and support the NACA effort, providing any products they produce in electronic format as well as manpower, as they consider it that important. Langley and Redstone have the same STILUS system and can input directly into RECON or each other.

Other libraries also have the STYLUS program. The Air Force Weapons Laboratory has it and they have a large NASA collection. Others are looking at it. NASA is interested in anyone who already has material in electronic format, as this might be able to be used. If the Facility had a copy of the STYLUS format, it might not be that difficult to make the conversion to the STIMS database (which is RECON).

Standards: Through SBIN (Shared Bibliographic Input Network) cataloging is input to the DTIC database by following DTIC COSATI guidelines and this works very well. In NASA/RECON, the NASA rules and thesaurus would have to be followed. That is one of the problems is merging NASA

records and DTIC records. There are ways to deal with the problems and help the process. For example, the Facility has a subject switching program to convert DTIC to NASA terminology.

The current database contains strictly what was on the catalog cards. The cataloging was done by so many different people those records became piecemeal. When the original cards were created, the policy was "type what you see." If errors in the NACA database can be mapped, a program can be written to handle them. A small group is needed to analyze the records, determine a format, and identify what can be done globally by a program.

THE OPTIMAL NACA DATABASE. (Carolyn Floyd, Librarian, Langley Research Center) The optimal NACA Database should provide full-text retrieval of all documents (including graphics) in the NACA collection. This includes pictures, tables, charts, line drawing, and perhaps some figures. The *Jane's All the World's Aircraft* on CD-ROM, with figures and pictures, is a pretty good product.

The NACA Collection is the international aeronautics and aerospace material cataloged from 1915-1958. This definition of the NACA collection is fairly consistent with the year range. However, there are some documents beyond the 1958 time frame in the NASA file T. We did a scan of the NACA database and retrieved about 4,000 NASA documents. About 50% of the records found in file T also are in file G.

The content of the NACA database should be a historically accurate representation of the NACA collection, which includes international sources, variant document types, and subjects. Most of us are familiar with the subject coverage of the NACA collection. There was a question in the first presentation of formal versus informal reports. NACA reports could have been contractor produced during those early years.

Users over the past 5 or 10 years have asked for the full-text of documents online. They would like to work and have them accessible through a network environment. They would like to sit at their desk, in the interest of time and money to the government. Instead of having to go to the library to retrieve a hard copy from the stacks, they would like to be able to scan the report from their desk. That capability is here. This is a requirement that lead researchers, especially, have been requesting over the years.

Users should be able to access the full-text database by subject, key data elements, such as contract number, phrases, airplane type, etc. You have to set up a structure for access vocabulary. It depends upon what you put into the vocabulary to access it as

full text. It is up to the NASA community, which includes private industry and the academic community, to set up the guidelines.

When users ask for information on a very general basis and they want to look at multiple related documents, they want to scan them online and be able to target bits and pieces of information within that documentation to pull together their full storied reports.

The NACA collection is the core of the NASA report literature. Many people are using the NACA report literature as a foundation in their classes at some of the universities, on a graduate, post-graduate and non-graduate level.

We know that the optimal NACA Database is not here. We know it is going to be a long time before we get to this point. The contents should be comprehensive as possible. There are publications that many of the NASA libraries have that describe the NACA collection. The Works Project Administration in New York, in conjunction with AIAA (it was the Institute of Aeronautical Sciences then), published a series of aeronautical bibliographies, with subject content. AIAA published an early version of the engineering impacts, from the 30's through 1958. Paul Brockett, assistant librarian at the Smithsonian, published a series of bibliographies and many of them are under the NACA heading. There probably is considerable overlap, but it will be worth looking at these items to see the level of comprehensiveness and a lot of them cover the open literature as well. The NACA collection includes documents from Germany, the Netherlands, Spain, Italy, France, Australia, and Great Britain. These items represent publications from private industry, government, and academic institutions.

Document types include technical reports, journal articles, and translations, as well as pamphlets. Subjects people ask for include aeronautics, astronautics, metallurgy, materials research, optical technology (late 50's), tires, landing research, sonic boom, and structures.

Data elements that would be desirable are: Author, title, corporate source, subject terms, publication date, pagination, report number(s), shelf list number, abstract contract number(s), language, and miscellaneous notes.

The issue of standards is important. We have the COSATI or CENDI guidelines. We are most familiar with DTIC guidelines and the NASA guidelines used at NASA/STIF. While looking at the formatting of our bibliographic records for documents, we had an opportunity to see how varied the interpretations of the CENDI guidelines are. DTIC's guidelines are more extensive, requiring more detailed data elements. We have been trying to conform to

the NASA standards so that when it interfaces to Dial-up, it will be easier to talk to RECON via STYLUS and have records overlayed.

In regard to document availability, I had an experience with trying to get material from the National Archives that was very disturbing. The NASA libraries should really try to hold on to their documents as an active collection. We get numerous requests for NACA documents. On reference duty for one day, six or seven requests came across the phone lines. We constantly get requests from private industry and academic institutions. STIF refers people to us, too. It is a very, very active and useful collection.

You already have heard that the NACA collection should be available from RECON and on CD-ROM format. Access to the collection on RECON could be restricted to the bibliographic citations and abstracts. On CD-ROM, the ideal would be to have the NACA collection in its entirety - meaning pulling together the aerospace literature that was published by Brockett, the WPA/AIAA lists, etc. This will require a lot of work as well as time and expertise.

NACA reports are unique. They have a lengthy life cycle. Langley searches the bibliographic file more than 50 times a month. Several of the professors from Virginia Tech, George Washington University, and other engineering schools use the NACA collection for foundation type information. The NACA collection includes the theoretical development and continues to be referenced in specific applications. From the theoretical standpoint, the information is just as valid as it was when published. It includes laws of physics and mathematics which have not changed. Therefore, the planning and execution of this NACA database is extremely important, on a world-wide basis.

Some of the reports in the collection that are from Great Britain may not even be available. Many years ago, some of the reports were destroyed. Some have gone to the National Archives and it is impossible to get some items from there. You will be charged a fee, there would be an extremely lengthy turn around time, and the request has to come from a high official from your organization. A recent specific situation was they wanted to charge about $450 for NASA to get a report, which was needed by a researcher to look at the shuttle tile issue. The minimum turn around time they promised was three months. It is critical that NASA hold on to as many of those reports as possible, so they are available in a timely and cost-beneficial way.

Discussion:

> Full-text retrieval: Whether users want retrieval through full-text was questioned. One view was that even with stop words, it should be a full-text database, with full text of

the reports online; This need not be a part of RECON, but it would be a good CD-ROM product. Another view was that even though the user wants the full text document, whether he is searching the surrogate record or whether he is searching full text indexing does not make a difference to him, as long as he gets the information he wants; It depends on how thoroughly the surrogate records are indexed or created and that depends on the standard that is chosen. If users ask very vague questions that can be answered by the NACA collection, full-text retrievability online is needed. If users ask for a report number, author, or title, the indexing of full-text online is not needed even though full-text is delivered electronically. The real question is whether full-text should be indexed or just the surrogate record. This is an issue for a smaller group. Things to keep in mind: (1) Bit-mapped images are a lot cheaper to produce than full-text and used with the surrogate record would serve 80% of the requirement and (2) the information must be delivered over local area networks and, therefore, it is tied into what the local area networks can handle.

Subject terms: In view of the difference between the subject terms in the current NACA database and the NASA Thesaurus, it would be beneficial to have more than one subject term field, like DTIC. The original terms could be identifiers and the current NASA Thesaurus the subject authority, with a field so either could be searched.

Access: The Database should be for access as well as for identification. Unless full-text is provided so it is available to everyone, you have to know where the document exists and if a copy is available.

NACA archives: The NACA publications collection at the National Archives should be pulled back by NASA. An IRM Office note from December 6, 1990, says the National Archives has sent NASA final approval to transfer the NACA collection currently located at the Washington National Records Center, as of 1992. Once the Archives gets it, it will be essentially unavailable to NASA researchers.

DEFICIENCIES IN ONLINE FILE. (Mary Walsh, Acting Chief, Library Branch, Ames Research Center) I am glad this meeting is being held. It is about 20 years overdue. At Ames this is also a very vital active file. It is by no means a dead one. However, it is dying. These are actual reports [copies held up for viewing]. This one is by Hugh Dryden and this one by R. T. Jones, two of the top researchers that NASA has. These reports are in daily use because the things that at that time were theoretical possibilities, such as forward swept wing, are now being done. With composite materials we can do it. They are coming out of the theoretical into the experimental.

At Ames, the problem is they can't get to this material. We did not realize that we might be the only place that had these documents. We all relied on mother Langley to have everything inhouse. I am not sure that mother Langley has managed to hold on to everything. We allowed free access to our documents until about 3 years ago. So, our NACA document may be in everybody's office all over the center and we may not get them back.

The online file is a very good start. There are some problems with it. Some of these problems have carried over from the cards themselves. Some developed, I think, from the speed with which the file was put up.

o   The completeness of the file is unknown.

o   NACA records are also in other RECON files, not just the T file.

o   Indexing is unique to the file.

o   Mnemonics are unique to the file.

o   There is inconsistent field entry in the file.

o   Restricted document status is unknown.

o   Typographical entry errors in the file are a problem.

The completeness of the file is unknown. This relates to the fact that the completeness of the NACA documents is unknown. We are not quite sure how big it is. There are 111,000 items in file T, but we are not sure if that is 50% of the Langley catalog or 92%. I feel like we all have a piece of the elephant and maybe we can put the whole thing together.

NACA records are also in other RECON files. Although everything in file T is in the Langley catalog, there also are records from the Langley catalog in file G and file N and I am not sure if they are reflected in file T as well. The overlap of these files is not known.

The indexing is unique to the file. It does go along with the old NACA indexing. However, it should have an overlay of NASA Thesaurus terms put on top of it. We do not want to lose the old indexing terms. Some of them are very specific. An example: INSTRUMENTS FOR TESTING AND RESEARCH FOR AIRCRAFT - a real catchy little phrase. It would be a very good idea to put indexing terms on top of the subject indexing terms that are already there. Right now it takes a very persistent expert user, not just an expert user. If not, you are just not going to find it.

<u>Mnemonics are unique to the file</u>. [Examples shown.] There has been some effort at the Facility. TXT was a blanket search mode for which I am very thankful. It lets you search all the text fields at one time. It is somewhat helpful.

<u>Inconsistent field entry</u>: [Examples shown.] We find discrepancies in the shelf list number and the report number. There is an awful lot of stuff on the cards that was tossed under miscellaneous note. Sometimes the secondary author is under miscellaneous note, which is a little bit upsetting.

If you have an expert searcher who is using this weekly, he will remember these things. If you have someone who is searching it monthly forget it. If you have an end user, he is lost. He is not going to get anything out of this file.

<u>Restricted document status is unknown</u>. This is something that no one else has mentioned yet, but my reference staff wanted me to make a big point of it. We have people who are desperate to get their hands on a 1942 document and it says "confidential." We can only verify that it is not by going back to the originating office, and they do not want to wait that long. Two from 1952 pulled at random are one from Wright-Patterson (confidential special handling) and the other an N number.

A blanket printout of everything that the War Office ever did needs to be sent to its successor for a ruling on whether these documents are still classified.

<u>Typographical entry errors are a problem</u>. [Examples shown.] Errors in subject entries occur the most. We would like quality control, quality control, quality control.

These files are good but they are only as good as they are clean. If the files are not clean, not only will it be tough for the NASA inhouse personnel to use them, it is going to be impossible to sell these on the market.

We have been spending the past year and a half going out to all of our end users at meetings and small groups and telling them what libraries do, which is a new thing for us, asking them what they want and telling them what our plans are. Two things that uniformly have made them sit up and their eyes twinkle are remote access to their office, which is the first thing that they want, and second the preserving of NACA documents.

<u>Discussion</u>:

> <u>Restrictions</u>: A sort by corporate source could be done to identify documents that still carry security classifications. The corporate author is the only one who can release it. Some of these corporate sources do not

exist anymore and no one else wants to make the decision. The British Restricted items are treated as U.S.Confidential. It is very difficult to know what the true status is.

Restrictions are part of the miscellaneous note. They should have a different field. There are a lot of strange things in the miscellaneous notes. An incredible amount of good information is in there. It would be nice to go back and pull out and align it somewhere else.

NACA database searching: If you get zero hits, it would be nice to know that it is because it is not in there, and not that you do not know how to pull it out. Usually, there is a patron sitting next to you and the clock is ticking away. You do not have the luxury of sitting by yourself and figuring out what to do. He gives you ten minutes and he wants it and he wants it now. That is something all the centers have in common - the end user at hand, he's panting down your neck, and he is annoyed because the printer is going slow. And, you have four people waiting in line behind him or her. Anything that can be done to bring the Database more in line with the other files on RECON would be a big help.

Report number entries: Shelf list numbers and report numbers are broken up in the indexes. If someone enters a shelf list number CN 12345, unless you use phrase searching in order to put those items together, it is lost in space. Sometimes CN and sometimes N is used. Whether these should be valid entries or term entries was discussed.

Field entries: Inconsistent field entry is of great concern. Sometimes the shelf list number is the report number, sometimes not. Sometimes the shelf list is half of the report number (a favorite).

Database coverage: Between 1958 and 1962 many documents produced by NASA have both NASA and NACA numbers. Definitions and criteria for what actually goes into the NACA file (versus the NASA files) are needed. The problem goes both ways. There are NASA documents in the NACA file.

Document dates: Dates of documents are another problem. In 1968, NASA people did a compilation on a subject area and would append NACA reports. The document number and date is for the package. The report date might be 1935 but the date is recorded as 1971 (when someone put together the package). NACA reports are scattered as pieces of other documents.

Document availability: About 15 years ago, all duplicate NACA documents held by one Center were sent to the Federal

retention center. In the past ten years, some of the
Centers have sent boxes of these documents to the Facility,
all of which have not yet been unpacked. The Hartford
Public Library is going to ship to the Facility about 58
linear feet of NACA reports. The Facility has as many as
ten copies of some NACA reports.

Document preservation: There is low humidity in California
and yet the documents are falling apart. Original documents
must be kept somewhere as a resource. A suggestion was to
make a copy on buffered paper, on acid-free paper, which can
be used. Some 1135 NACA reports, done by the Ames staff on
equations and charts for compressible flow, have been
reprinted in recent years.

Summation. (Barbara Everidge) We should not leave today without
an action plan. Things we need to talk about are what data
elements should be in the Database, how these should be
formatted, and the kind of standards to use. The size of the
group here shows a lot of interest in the project overall. What
I would like to do is form small groups of people who are willing
to work together on one particular aspect of this. If we can get
a list of issues and a list of volunteers who are willing to come
up with some kind of action plan after this date, I think that
would be a significant contribution to this project by the end of
the day. From our discussion this morning, I have written a few
topics on the copy board. As you talk with each other at lunch,
write down suggestions. If you are interested in serving with a
group, put your name under the topic on the board. We can add to
it this afternoon as we go through our discussions.

NACA DOCUMENTS

AVAILABILITY. (Dian Marincola, User Services Section, NASA STI
Facility) As one of the managers responsible for document
request processing at the Facility, I have a keen interest in the
NACA document collection. I have always referred to the NACA
document collection as one of the great unsolved mysteries. As a
matter of fact, I have religiously watched the show, because I
expect Robert Stack to be shot in our archive area saying, "Do
you know what's in here? Do you know how they are filed?" And
with that attitude, I approached this and really got into the
documents.

Until about two weeks ago, I didn't know much about the
collection. I knew about the shelf list cards. I knew about the
horror stories in trying to search the online files. I knew the
looks on my clerks faces when we sent them down to get a NACA
document and they would say, "I'm really busy. I'm on a rush for
somebody." I could never understand why. It is just a document.

Then, I went back in the hallowed halls of the NACA document collection.

I looked at it from availability, because that is what I was told to do for today's presentation. Availability means the actually physically transferring a document to another individual for ownership of the document, at least a copy of it. My view is a little different than a librarian, as I am not in the business of lending. Occasionally we do, we honor interlibrary loan to centers and other organizations if we cannot provide the document. When I look at availability, I need to look at five issues:

1. Collection definition. When I went back into the collection, I said, "What's supposed to be here and what am I supposed to have?"

2. STI Facility holdings. What do we have? What subset of the universe do we have?

3. Other holdings. If we don't have it, then who does?

4. Access. If we have it, who can we give it to or supply it to?

5. Format. What format do we have it in and what format can we exchange with someone else.

I will admit embarrassment at first. I went down there thinking it would take a couple hours to pull these figures together. I actually started with issue 1 and 2. Then I came back to 1 and said, "Wait a minute. I don't know this. I think this is the key to what we've all been talking about." There's certainly a key to availability, a key to preservation. What are you going to preserve? What are you going to put on CD-ROM?

My gross generalizations are you have NACA and non-NACA. But even then, I was never really sure of why, when I sent a clerk down to get a document that someone had requested, they would say, "We don't have it." Here is a key. This is a two-part graph. Let me explain to you some of these figures because I was really excited about this. One of the things I always wanted to know was how many TMs, TRs, and TNs were issued. These figures will match up with what CalTech has and submitted to Updata. There were 1,441 TMs, 1,391 TRs or Reports, and 4,410 TNs. I know this because I found a reference to it in the third issue of the *Publications Announcements* that NASA put out. It told me these were how many they issued, so we can say that they are good numbers. Put the "good" in quotes because it gets a little itchy later.

The Wartime Reports are interesting. They were quick
distribution of reports in progress - Advanced Restricted Reports
and Advanced Confidential Reports and some other things. I found
listings that told me what they were and how many were issued, so
there were something like 21 issues of this wartime list. I just
looked at the last numbers, so I feel comfortable with these
numbers. Comfortable, but not absolute.

The NACA RMs, I don't know. I mean, I am not really sure. This
is what we had in our log books at the Facility. It is how many
were supposed to have or should have been issued. So on these, I
put a little question mark saying, "Hey, do we have better
figures on these?"

The next viewgraph continues with what I consider the NACA RNs,
but Secret from Ames, Secret from Lewis and Secret from Langley.
I am not sure about these figures. I found them in the log
books. That's what we should have, but physical verification I
could not do.

Annual Reports. You know we haven't really talked about Annual
Reports. There is one version of the Annual Report and 44 of
them were issued. There is another, without the full reports
entered in them. So, if you have a collection of Annual Reports,
you should have all the full text of every report issued by NACA.
In the 44th volume, which is the final report, there is something
very important in the back. It has listings in numerical order,
the full title and author of every report issued by NACA during
each year. It incliudes the Technical Notes, Technical
Memoranda, and (something I was really anxious to see) other
technical papers by staff members - published literature that was
not necessarily issued as a full NACA published report. So,
obviously, we have an index. We know what should have been there
and can prepare a master listing. We have all the reports,
because we have all the Annual Reports. But, it gets tricker
than that. No technical document has a life span of forever.
Things were superseded, killed, embarrassingly pulled off the
shelf (saying "never distribute" or "out of print" or "let's bury
it" or "I am sorry I put my name on it"). Some of the reports do
say that. So, don't trust the figures. You have to contend with
this in preparing the master list, but we have information that
tells us all that.

MPs, did anyone ever see an MP before? I was up in the stacks
over the weekend trying to prepare this bibliography. I pulled
these papers and some of them date back to the 1915-16 timeframe.
These were things presented at exhibits, or airshows in Paris or
in Germany. They numbered them, at least in the library. I only
had a piece of it, like from number 3 through number 47. I
counted them and there were 30. They are really NACA reports
considering somebody from NACA presented it somewhere. Good

photographs of some of the old planes, valuable information. Should this be distributed or archived? I don't know.

You should notice something missing from this list of formal reports. There is no listing for the Advanced Confidential reports, the Advanced Restricted Reports, the Research Bulletins, and the Confidential Bulletins. I went to my clerk and said, "This list doesn't make any sense. Don't you ever get requests for ACRs or CBs, etc.?" She said, "We usually don't have them." I said, "How do you know that?" She said she usually looks in the log book and checks the cross-reference. So, what I found buried in the clerk area, in the back of one of them I see a blue area which shows the Advanced Restricted Reports, the CBs, etc., what their new numbers are, whether they were issued as a TM or that they were killed. As we look at the collection, we say we should have all of these series, not considering what really should be taken out because they killed it.

At the Facility NACA documents usually are arranged by the report number. We can find it. We can tell you very easily whether we have a case file or stock copy. But, when you get into the non-NACA material, it gets a little more complicated because they ran numbers together. Have you ever had a request for a NACA document by an N number that looks like a shelf number, N-15? About 1950, Langley started using this modified version of the Dewey decimal system to file the cards. Physical documents were merged in with this decimal system. In all, there are about 15,420 reports, excluding the ACRs and ARRs and perhaps other collections. There is a whole list of all the collections, but this really collapses most of them.

Most of the ACRs and things like that are in the Wartime Reports. The Facility has a listing of these reports by center and what they were superseded by or transferred to. In other words, we have a lot of information to compile the master list.

The non-NACA figures are squirrely. At the Facility we refer to them as NACA stuff, Langley Ns, Dewey numbers, or British R&Ms. The Langley Ns are simply what Langley reported to us on its card catalog cartridges. The "Dewey" numbers are anything that didn't have an N number issued with it. This is a subject number. The British R&Ms are reports and memoranda from someone in England. A lot of what we have is from the NACA Paris Office. To identify these NACA reports, I have prepared a list of selected sources identifying NACA reports, a list of indexes. With this, I hope to prepare an annotated bibliography.

One of the indexes to NACA publications produced by NASA gives the report series, the symbol for them, how they numbered them, currently issued (yes or no based on the time of the index), the reporting scheme, how they referenced their numbers and a little blurb on how they did it. However, we do need to come up with a

definition soon as to what we mean by the NACA document collection, what needs to be preserved, what not to preserve, and the order in which you want to tackle that task.

On preservation, there are microfiche collections of at least the NACA reports, issued by Updata. Other organizations like MIT say they have microfiche backups. Datamix, a company similar to Updata, was listed in an old document as having a full collection of NACA documents and willing to sell copies. CalTech, MIT, Princeton, and Rockwell claim they have the full set. Grumman has a comprehensive set.

On what the Facility has, I estimate 16,000 NACA reports, about 15,000 non-NACA documents. We have not done a physical inventory. This is not a definitive list.

On distribution limitations, security classifications and copyright restrictions are issues. There are more. I have documentation that says the NACA Headquarters declassified some of the documents. I have a letter on file that says Langley did the same thing. The question is who else and where else do you go in regard to classified material.   The question of copyright pertains to the non-NACA collection. Does this copyright still hold, for the domestic and international? Tom Lahr will address this later. You don't have to have a security classification on a document to make it distribution sensitive. A note on the documents say "NASA personnel only" and that restriction still holds. It is a cumbersome process to get these restrictions lifted, but one we need to look at. The Facility has a letter from Headquarters saying that the NACA Headquarters shelf list file has been declassified.

On format, media options currently are available: (1) stock, (2) one to one reproduction, or (3) blowback from microfiche. In some cases microfiche copies can be supplied. If you do a very simple search of file G and file D, looking for NACA in the report number field, you come up with approximately 1,200 documents that have received full bibliographic processing. We have the microfiche for those. There are a few TMs, but most of them are RMs. This represents only 7.6% of the entire NACA collection.

Stock is degrading. The stacks are bug-infested. I was excited about going into them, looking at documents and photographs, but I had to get away from it. The files themselves are only manilla folders, usually stored vertically, and we are losing a great portion of it. Is it worth spending resources on preservation if you can buy a copy of the microfiche? Does that constitute the archive? I love the old documents. I love the way they look and the way they feel. It's nice to go through them. There is a sense of history about them. I suspect they need to be stored under special conditions until you can make a working copy. Some

of the documents in the non-NACA collection were processed by
blueprint method and with blue-print paper and the little
critters in there are really itchy. At the Facility, all these
documents are sitting on shelves. There is no controlled
environment.

The Facility has a portion of the original NACA library
collection, the holdings themselves. In that you will find a lot
of bound reports, but no one has done a one-to-one match to fill
in some of the gaps in the non-NACA material. These could be cut
and scanned. The real question is: What are you trying to
preserve, the paper or the information?

Discussion:

> Indexes: Each of the Annual Report bound volumes has a list
> of publications in the front, so all those reports are
> indexed. Old documentation is available which include
> definitions of those numbering series that were used for the
> non-NACA reports. Indexes also are available that give
> definitions for the N numbered items, as well as the SNs.
>
> Definition of collection: Some people are proud of says
> they have the full NACA collection, such as MIT. A
> definition of the full NACA collection as perceived by
> universities or private industry has not been identified.
> Some look at just the NACA reports as the collection and
> other see it as a broader collection, international in
> scope, with variant sources.
>
> Restrictions: The shelf list cards sometimes they say the
> document is "formerly classified, or restricted." Usually
> on the document itself there should be a reference to the
> letter that declassified it.
>
> Preservation: The bound volumes might be in better
> condition, but they are bound so tightly, they cannot always
> be used to copy. The Reports are on shiny, coated paper
> which might last longer. The biggest problem is with the
> TMs, as some are on very bad mimeograph paper and actually
> are disintegrating - those and the translation series. IBM
> and Xerox sponsored a project at Cornell for preserving a
> series of archival papers - an experiment. It is not just
> the paper, but the microfilm cartridges, too. The ones
> where there is black printing on white are invisible. It
> looks like somebody came through and erased the originals.
> The Washington National Records Center has the full film
> collection from Langley, but that film collection is bad
> even though it is stored in a limestone cave. New technology
> can enhance almost invisible microfilm so you can read it.
> One of the things the working groups on Definition and
> Preservation could address is: Is it the information or the

documents that we want to preserve? Users prefer hard copy
originals or good copy that was reproduced with the same
degree of integrity. They do not want anything on
microfiche. Many of the NACA reports are oversized and that
is a problem if you have to reduce them. Graphs and tables
lose definition.

Updata microfiche: A discussion ensued as to whether the
Updata microfiche collection could serve as a NACA archive.
The microfiche they have is excellent quality (silver halide
masters). Microfiche copies are supplied in diazo (non-
archival quality). There were differences expressed about
whether Updata offers for sale only bulk microfiche by date
or is willing to provide individual copies (minimum order
$50). When Updata microfiched the CalTech collection they
provided CalTech a copy. Langley also has a copy. Updata
has a copyright on its microfiche collection. It was noted
that the Government which invested in creating the
information is now paying somebody for their information
again at taxpayers expense. Consensus was that the
Preservation working group should look at whether NASA
should proceed with its own program, buy multiple sets from
Updata or some other alternative, how much of the Updata
collection matches the definition developed by the
Definition working group, whether one set of microfiche
could be purchased to be scanned into a full-text online
system (and legal ramifications of doing this), whether this
is more cost-effective than handling the falling-apart
documents, etc.

NARS COLLECTION

WHAT IS IN IT. (Kay Voglewede, Technical Publications, NASA/HQ-
NTT) NARA is the new name for NARS. I think most of us are
familiar with the archive system. The National Archives and
Records Administration (NARA) is responsible for preserving
Federal records on a permanent basis. We are more involved with
the regional Federal Records Center. We have identified records
that have some importance and think they should be stored for
some period of time, possibly permanently. NASA has a records
management system and a lot of records are identified through
that system. They go to the Federal Records Center and then,
ultimately, if they are to be store permanently, to the Archives.

As for the NACA collection, NARA now has about 5,000 cubic feet.
This includes NACA reports, the non-NACA reports (including
foreign reports), and some other considered-important background
information. All these items are in the NACA collection at NARA.
I am told that NARA does have a full collection of the NACA
reports, except some numbers are missing. Basically, they have
almost the complete set.

The collection we are about to transfer to NARA from the Washington National Records Center is all labeled non-record material. That means it was material generated outside of NASA, not sponsored by NASA. This includes British reports and reports contractors, such as McDonnell-Douglas may have generated. We are trying to find out what is in the collection and whether it is something we want to keep available. There are points within the Agency that can authorize access.

Discussion:

Access at NARA: These reports are part of that NACA collection. Those that do not have the NACA report numbers are difficult to find. NASA needs to find a way and get the authority to hold back on giving those to NARA in 1992. If a copy is needed it takes a long time to get it from NARA. Most library budgets do not provide for paying $500 for each title that is needed. Shelf list cards show that Headquarters has the only copy, and those are the documents that went to the national records center. This is a problem. If Headquarters is supposed to have retained a copy for the Agency and they are at the Federal Records Center, NARA will come in and take them. It means they are virtually unavailable to the users.

NARA officials are visiting the Centers during FY91 and under public law they can confiscate anything that is thirty years old or older. That means there is a strong potential for the NACA documents to be confiscated. They will visit Langley this summer. NASA has been concerned that they are trying to take the photo collection that NASA uses all the time. Also, NARA wants to know what databases are in all the Federal agencies because they are going to start archiving electronic databases. The Preservation working group should specifically take a look at the Washington National Records Center and the NARA connection. We could tell NARA that we already have given them all the originals.

NACA holdings: It might be useful to set up a matrix that says what each Center has and the format, paper or fiche. The NACA collection at the Facility is quarantined and the centers might do the same thing. After we define the collection, the Centers should do a physical inventory to identify what is completely unique, what has to be replicated and sent to another center. Most of the Centers are near major cities and can use students from library schools to help at little or no cost.

INTERNATIONAL ASPECTS

NACA FOREIGN DOCUMENTS. (Tom Lahr, NASA/HQ-NTT) The nice thing about being last is that everyone this morning mentioned something about what I was going to say. So, I will just go over it quickly and give a brief review of the international aspects. Actually, it is not so much a review as raising some questions and throwing out some topics for consideration.

There are a number of sources of international documents in the NACA collection. These are called the non-NACA collection, because one thing we can be sure of is that NACA documents are not the international documents. Yet, the international documents are part of the NACA collection. How large is the non-NACA collection? What percentage of the non-NACA collection is the world of aeronautical research from 1900 to 1958? It is everything that would have been collected by STIF and AIAA, everything that would be in RECON, in STAR, in IAA up to the time we started producing that stuff.

I have been looking at the international aspect and it is not easy to find any answer to these questions. In playing a little with the NACA file T on RECON, I found there is no easy way to identify everything with a country of origin outside the U.S. You can retrieve corporate source, but sometimes the country is not in the corporate source. It is very difficult to find.

The other thing I have to say is everything Dian said. The international aspect of it is just a subset. It goes back to the collection definition, as well as availability and distribution limitations and restrictions. In a quick search, I found 1,045 with just some permutation of Britain in the corporate source. Then I started to print out limited ones. In searching limitation statements and miscellaneous notes for restriction and limitation statements without respect to country, I found British reports. I never would have retrieved them searching England or Britain. In all, I found 3 or 4 thousand citations that could immediately be identified as foreign. Someone could spend hours and days going through the other 112,000 to identify those which are of foreign origin.

Are you only going to collect things that are publicly available, that you can guarantee are publicly available? Are you going to collect everything? In searching, I found a number of countries represented: U.S., Germany, the Netherlands, Spain, Italy, France, Australia, Belgium, Canada, etc. Just looking at limitations, I found 465 for Canada, 450 Italy, 659 France, 249 Australia, and there are a lot more than that.

There is an international aspect of the collection because it was world-wide aeronautical research at the time that NACA collected. It is just as complicated today. It may be a little easier in that we can utilize our foreign partners and AIAA's expertise at finding out whether some of this information is limited or

available. We can't just send out a blanket list of all these
items and say they are no longer classified or restricted,
because no one will acknowledge that they control the documents.
If it were a NASA contractual report, NASA could take control of
it. Otherwise, the only way to find out about taking off the
restriction is to go back to the source that controls it. You
can only downgrade or remove restrictions if you get authority to
do so, in writing from the originating organization (or its
successor).

Where are these reports? Are we planning to cite reports whether
they are U.S. reports or foreign when we do not have copies? Or,
just cite them for public knowledge and say these were published,
even if we cannot find these reports? Do we have the authority
to distribute these reports if we still have them? How much of
this stuff is duplicated in other areas? There are more
questions than there are answers. At one time, in 1972, the
Facility was instructed to dispose of all the foreign classified
reports. These were a block of British and Canadian reports
received from Langley up until 1960.

Collection definition will be very interesting. What it will
boil down to is: Are we going to go back and recapture
everything that NACA was interested in for the world? Or, start
with the NACA collections that NACA generated?

Discussion:

> Non-NACA documents: The Langley Technical Library was part
> of the NACA collection. There are 165,000 titles in the
> Langley shelf list cards. If 15,000 to 16,000 of those are
> NACA, some 150,000 are non-NACA titles.

> Restrictions: We do not really know the guidelines that
> were used to place restrictions on documents. It is
> difficult to identify successor organizations who have the
> authority to reclassify.

SUMMARY AND ANNOUNCEMENTS

SUMMARY. (Barbara Everidge) This has been a wonderful
discussion. It has brought out a lot of issues. It gives us
many things to do and I appreciate the people who have signed up
for these committees. (A list of the Working Groups and the
membership of each is attached.)

In these last few minutes we need to get at least a plan of
action as to where we go from here. Now that the issues have
been raised, we have people who have volunteered to take a look
at some of the sub-issues of the whole project. If we could have
one person from each of the groups volunteer to be a coordinator,

we can proceed to meet in small groups to draw up a list of
issues and/or things the group should look at. If those issues
are already clearly well defined, set up a plan or schedule of
action of what you want to do, how your committee needs to
interact with other committees.

I would like to talk about the milestones we already have set.
Ruth's study and the draft of her final report should be finished
by the end of March. But, in order to make that the best product
possible, I would like the groups to define the scope of what you
are going to do. At least come up with a list of issues that you
think your committee needs to address and an action plan. Set a
deadline, like the second week in March, for you to get some
first cut to Ruth so we can begin to define this animal that we
are working with. When we get together in April, we will have
the proceeds from Ruth's analysis up front, plus these outlines
of how we think we should proceed, both from the planning
committee and the individual sub-committees. Then we can take a
look at the whole thing together, do some revision, and plan out
a strategy of action for the next 6 to 9 months so we can produce
a usable product by the end of this calendar year - and define
whether this is going to be a 2 year effort or a 12 year effort.

As Gladys said, the important thing is to get a high quality
something out to the end user because that establishes the
validity of the project. It also helps, not just from the Code
NTT point of view, but from the centers as well that we all
worked together, that we have come up with something that is
useful, that's needed, and that's good quality. We all can
benefit from that.

As for helping us get the money, I don't have an answer for that.
What you can do is begin to talk about it, the fact that those
who have NACA documents and interested in doing something with
them are working with Headquarters on an agency-wide project that
you support. Some kind of draft letter could be provided to the
centers that would say something about the dissatisfaction in the
past and what is being done to change it, that you like the
direction the program is going, and keep supporting it, etc.

Discussion:

> Access: Availability/distribution is a problem no matter
> what we decide. You are pulling documents people can't have
> now. The problem has to be addressed. If we want a group
> of British documents to be included in the non-NACA
> collection, that will be part of what we decide to put on
> CD-ROM and make available in full-text. Then the action
> becomes to go back to the British and find out who in Great
> Britain is in charge of declassifying them, to get some kind
> of definitive answer. We need to work through those issues

91

in order to be able to include that in the product we are making.

This ties in directly with the development of the CD-ROM. The availability issue of foreign documents is probably at least a two-year exercise. Do an initial CD-ROM without those foreign documents. A second CD-ROM can be produced later. Think about these things in phases. There will not be enough money to do everything at the beginning. By developing a series of CD-ROMs, or getting out just the NACA produced documents, might be small enough to issue on a floppy disk with a PC searching software.

User feedback: It's not just the money issue. There are credibility issues. If we really want to do something for the end user who needs it, let's do something as soon as possible to make a difference in their environment. Then, we can keep upgrading their environment. I think they would rather have something in 6 or 9 months rather than something fantastic in 3 or 4 years. We need a bit of time to get back to the end users who need this, to clarify if this is what they actually want.

(Gladys Cotter) When the initial study analysis is done, we will come back with a final report and say, "Okay, these are the user requirements as we have heard them defined. Are we on the money or not?" This is something that the planning groups together can take a look at. We welcome feedback. If the feedback says, "No, this is not quite right," then we need to do a requirements validation before we proceed. In the meantime, those that are interested can be taking a look at some of these other issues and have them all come together so folks can be working concurrently, not sequentially.

This has been an excellent interchange of ideas and one of the best Coordinating Council meetings we have had. I appreciate all attending. Please keep in touch with members of your subcommittee and please keep in touch with us because that's the way we get things done.

NACA DOCUMENTS DATABASE PROJECT

WORKING GROUPS

Planning
Barbara Everidge (NASA/HQ-NTT), Chair
Sybil Bullock (Redstone SIC)
Carolyn Floyd (Langley RC)
Ruth Smith (Consultant)
AIAA/TIS

Availability (Distribution, restrictions, international
        issues)
Kay Voglewede (NASA/HQ-NTT), Chair
Walt Blados (NASA/HQ-NTT)
Tom Lahr (NASA/HQ-NTT)
Lou Ann Scanlan (NASA/HQ-NTT)
Ruth Smith (Consultant)

Bibliographic Citation Format
Dian Marincola (NASA/STIF), Chair
Irene Bogolubsky (AIAA/TIS)
Sybil Bullock (Redstone SIC)
Susan Oberc (Lewis RC)
Ruth Smith (Consultant)
John Wilson (NASA/HQ-NTT)

CD-ROM Issues
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Sybil Bullock (Redstone SIC)
Carolyn Floyd (Langley RC)
Tom Lahr (NASA/HQ-NTT)
Joe Langdon (NASA/DBD-3)
Ruth Smith (Consultant)
Geoff Worton (AIAA/TIS)

Collection Definition
Mary Walsh (Ames RC), Chair
Tom Lahr (NASA/HQ-NTT)
Dian Marincola (NASA/STIF)
Ruth Smith (Consultant)

Preservation/Media (NARA, NWRC)
Allan Kuehn (NASA/HQ-NTT)
Jean (Virginia) Anderson (CalTech)
Ruth Smith (Consultant)
Kay Voglewede (NASA/HQ-NTT)
Mary Walsh (Ames RC)

February 7, 1991

NASA STI PROGRAMS COORDINATING COUNCIL MEETING
February 7, 1991

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C-2

NACA DOCUMENTS DATABASE PROJECT

APPENDIX TO FINAL REPORT

Responses to the Survey of Centers

NASA and NASA-related centers

AIAA	American Institute of Aeronautics and Astronautics
Ames RC	Ames Research Center
Ames Dryden	Ames Research Center, Dryden Flight Research Activity
Goddard ISS	Goddard Institute for Space Studies
Goddard SFC	Goddard Space Flight Center
JPL	Jet Propulsion Laboratory
Johnson SC	Johnson Space Center
Kennedy SC	Kennedy Space Center
Langley RC	Langley Research Center
Lewis RC	Lewis Research Center
Marshall SF	Marshall Space Flight Center
NASA/HQ Lib	NASA/HQ Technical Library
NASA/STIF	NASA/STI Facility
Redstone SIC	Redstone Scientific Information Center
Stennis SC	Stennis Space Center

Other centers

AEDC	AECD Technical Library (USAF)
Boeing	The Boeing Company
CalTech	California Institute of Technology
Cubic	Cubic Defense Systems
Douglas	Douglas Aircraft Company
FluiDyne	FluiDyne Engineering Corporation
G. Dynamics	General Dynamics Corporation
Gulfstream	Gulfstream Aerospace Corporation
LC	Library of Congress
Nielsen	Nielsen Engineering & Research, Inc.
NIST	National Institute of Standards and Technology
NTIS	National Technical Information Service
Raytheon	Raytheon Company
TRW	TRW Inc.
U. of MD	University of Maryland, Engineering & Physical Sciences Library
Wright Lab.	Wright Laboratory Technical Library

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13. ABSTRACT (Maximum 200 words)

The NACA Documents Database Project has a two-fold purpose: (1) to develop the definitive bibliography of NACA produced and/or held documents, and (2) to make that bibliography and the associated documents available to the aerospace community.

This study supports the first objective by providing an analysis of the NACA collection and its bibliographic records, and supports the second objective by defining the NACA archive and recommending methodologies for meeting the project objectives.

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