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REPORT R-1838

QUALITATIVE DEVELOPMENT REQUIREMENTS
INFORMATION (QDRI)

DEVELOPMENT OF MICROFILM PROGRAM IN SUPPORT OF
AMC QDRI DATA FILES

by

JAMES G. PEIRCE

AMCMS Code 5700.00.00201.02

DA Project 1A750203M613

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MARCH 1967



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AMC QDRI Data Files Program Action Office
U. S. ARMY FRANKFORD ARSENAL
Philadelphia, Pa. 19137

March 1967

ABSTRACT

Microfilming of QDRI records was proposed in order to make total QDRI registration data more accessible to all QDRI offices, create uniform Army-wide QDRI records, reduce volume of QDRI files, limit data requirements on the QDRI data bank (RODATA), and provide faster and more accurate updating of industrial R&D catalog information. The VSMF System of Information Handling Services, Englewood, Colorado was selected as a promising possibility. This report outlines the results obtained from a test using Boston Procurement District files, and contains recommendations for expansion to an Army-wide standard operating system. This activity is considered as a part of the Army's scientific and technical information program.

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INTRODUCTION

During the summer of 1965, the VSMF* (Visual Search Microfilm File) operation was brought to the attention of the managers of the Army QDRI (Qualitative Development Requirements Information) program. Briefly, the VSMF mechanism is a relatively simple combination of printed product indexing and 16mm microfilm cartridge recording of product catalogs and product specifications made quickly retrievable and visible by either Kodak's Recordak or the 3M Filmac microfilm reader printers. Of primary interest to the QDRI program and the development of the AMC QDRI Data Files for the Registered Organization Data Bank (RODATA) was the fact that most of the industries registered in the QDRI program were represented on VSMF microfilm cartridges, and that there was a great similarity in QDRI and VSMF procedures. It was seen almost immediately that there could be a great reduction in QDRI filing across the board in all AMC installations, with better access to industry catalog data, by adoption of VSMF methods of registration files, and also that such microfilming could be easily cross-referenced to the RODATA.

In November 1965, a visit was made to the proprietors of the VSMF system at Englewood, Colorado. The QDRI program was explained to the VSMF management, who in turn demonstrated all of the capabilities of the system. A tentative plan was evolved at that time, which was confirmed by a proposal letter in January 1966. The proposal was used as the basis for a purchase order in May 1966 for the preparation of microfilm cartridges on the QDRI files of the Boston Procurement District, as a pilot test preliminary to the microfilming of all QDRI records. This test was completed in October 1966, and the results were demonstrated during the balance of 1966 to groups of QDRI managers, and several Army-Industry associations. This report presents recommendations for future microfilming activities, aimed at total recording of all QDRI facility registration data.

* A copyrighted microfilm data file owned by Information Handling Service, Inc., Englewood, Colorado.

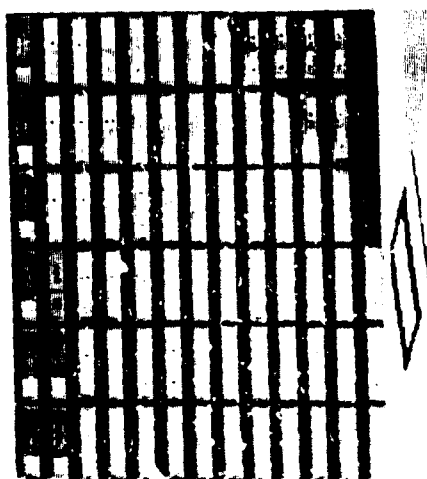
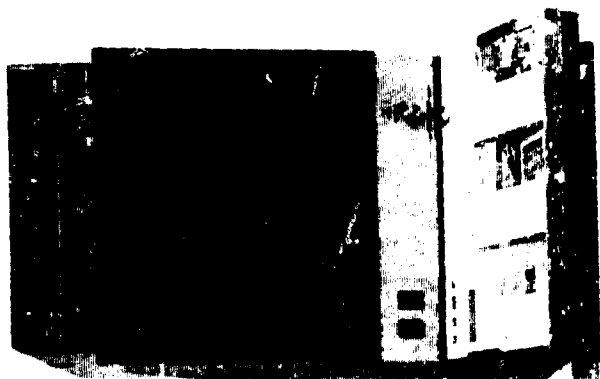


Figure 1. VSMF Microfilm Reader

THE PROBLEMS

Deactivation of the Procurement Districts

During the summer of 1965 the implementation of Project 60¹ began to effect most seriously the operations of the QDRI program. The Philadelphia Procurement District (the pilot Project 60 activity) had transferred its QDRI files to New York in 1964. The Detroit Procurement District had converted to DCAS in April 1965, and its files were transferred to the QDRI office at ATAC. The Boston Procurement District was scheduled to convert in July, and the other districts, with the exception of Los Angeles and San Francisco, were scheduled for conversion to DCAS at intervals during CY 1965. This conversion was put into effect without taking into full consideration changes in operating procedure in the QDRI program which would have to be effected as each district became deactivated.² Two major problems required solution in 1965.

These were first, the transfer of usable data from existing files in the districts to other locations in 1965 and 1966, and second, establishment of a uniform procedure for making new registrations, and updating old registrations.

The RODATA Plan

In March 1965, the QDRI office at Frankford Arsenal proposed the establishment of a computerized data bank at Frankford Arsenal for the data on civilian organizations registered in the QDRI program, in an attempt to solve the serious problems being encountered in recording new QDRI registrations and the updating of old registrations. This data bank, when fully actuated, would assist all Army registration agencies in location and assignment of registrations, and would

¹Project 60 was the plan for conversion of Army Procurement Districts and other DOD contract administration activities to DCAS (Defense Contract Administration Service).

²AMCR 76-19 provided that "When a district is phased out, contact will be made with the major subordinate command or separate laboratory or installation assigned the responsibility for qualifying industry."

become a major referral tool for use by all levels of QDRI management. The RODATA (an acronym for Registered Organization Data) would not assume the responsibility for QDRI qualification, which function is clearly the prerogative of each QDRI manager at major subordinate commands, their installations, or independent laboratories. It is important to the thesis of this report, however, that the RODATA would record basic identification and retrieval data about all hard copy which should be common to the files of all or almost all QDRI offices. The RODATA plan is to be found in Frankford Arsenal Memorandum Report M65-13-1, dated March 1965 (AD 612-595).

QDRI Files Reduction

There is another problem, general to the QDRI program at all RDTE agencies, which appears amenable to solution by institution of a microfilm process. This is files reduction. The average QDRI office has a variety of brochures and pamphlets on file covering at least five hundred or more registered organizations. Some civilian organizations are very good at updating their literature; others are not. The brochure material is seldom employed, although still useful, after the initial evaluation of the organization, except that once in a while the QDRI manager may use it to demonstrate to an engineer some unusual, but particularly pertinent data on a "just-needed-then" capability. If an engineer looking for new talents and capabilities had the time, he might like to browse in the QDRI capability brochures - but he never has time. Consequently, several QDRI managers destroy all brochure data when it is six months to one year old, including some very fancy and expensive presentations. Others find that large segments of their files are never used. Yet there is useful material in these files. Also, the DD Form 558-2 and AFSC Form 220 calls for background documentation supporting the stated capabilities of the registered organization. The instructions for the new R&D Capability Index propose considerable reduction of such documentation (see Appendix 1). Microfilming and a continuous microfilm program such as VSMF proposes would be most beneficial in this area, and useful R&D brochure data could be more easily and consistently utilized, updated, or retired. It is estimated that the eight to ten files now in use at Frankford Arsenal, for instance, could be easily reduced to two, with the addition of the microfilm reader and its magazine of cartridges.

Need for Hard Copy

There are seven more or less standard documents established in the QDRI management literature³ as submissions required from the civilian organizations registered in the QDRI Program (see Appendix 4). Approximately in the order of their importance to the program these are:

- (1) A policy agreement (AMC Form 1262 or equivalent);
- (2) Classification of the organization's capabilities (DD Form 558-2 or equivalent);
- (3) Certification of the current level of security clearance by the cognizant security agency (format varies);
- (4) Profiles or resumes of the key scientific and technical personnel in or available to the organization (no established format);
- (5) A listing of current and recent DOD or other government contracts applicable to claimed R&D capabilities (not formatted);
- (6) Description of the research and development facilities (real estate, laboratories, equipment) employed or available to the organization (also no established format); and
- (7) The latest financial statement or annual report containing such data (not an absolute QDRI requirement, but acceptable).

The QDRI rule has always been, up to now, that with the exception of the policy agreement and the DD Form 558-2, any company's available literature which presents the desired data is acceptable, and that elaborate brochures created particularly for the QDRI program are not necessary. In fact, some economy-minded managers are influenced adversely by elaborate presentations. Also, there is nothing new in these requirements. They represent the standard data requirements of the ASPR's, the Small Business Administration, and contracting officers generally for inclusion in DOD R&D Source Lists (except for the policy agreement which is peculiar to classified information programs). Most of this data is also required in connection with RDTE

³AMCR 70-19 dated 13 October 1964 and QDRI Vol. I, January 1965.

pre-award surveys. This is also identical with the hard copy data requirements of the new standardized DOD/NASA uniform industrial RDTE registration proposed on 30 January 1967 by the subcommittee on Case 66-151 to the ASPR Committee (see Appendices 1 and 2).

Consolidation of R&D Source Lists

It is the overall aim of DOD management to reduce duplication of data wherever possible, particularly its original compilation and storage in any well integrated organization. Industry associations such as NSIA (National Security Industrial Association) and EIA (Electronics Industries Association) have also requested DOD to reduce the number of forms, individual surveys, and submittal points required for RDTE qualification data. The Air Force has a single submittal point at Andrews Air Force Base, NASA a single submittal point at the Goddard Space Flight Center, but the Army and the Navy have not yet centralized. Responsibility in the Army is assigned to the Army Materiel Command. In USAMC it appears that procurement policy, except for acceptance of a uniform R&D Capability Index, is to allow each major procurement office to request individual submittals and establish source lists according to mission commodity assignments. At least, a few years ago when the Army Procurement Districts were operating, there was an across-the-board source selection capability in each district.⁴ Also, except in those installations where the procurement is mainly R&D (such as Natick Laboratories), variable attention is being paid by the procurement functions to the R&D source needs, both for pre-procurement information programs such as QDRI and the RDTE registrations in bidders source selection lists. Adoption of the uniform R&D Capability Index, and the establishment of the QDRI RODATA will help the Army create a separate data authority. Also, the initiation of the VSMF-type microfilm program will serve the same ends.

⁴This capability now exists officially only in the Northwest and Southwest Procurement Agencies.

THE VSMF PROCEDURE

The VSMF is an automated technical data file originally created for use by the design engineer in searches for product data. It is a relatively simple concept, not only in use, but also in preparation and execution. The cartridge microfilm application is not original with IHS, Inc. Almost everyone has by now seen its use by Sears Roebuck & Co., and other catalog-oriented organizations for the selection of spare parts and, for a more technical use, one is referred to recent adoption by Chemical Abstracts for reduction in file volumes and increased accessibility of back issues of that compendium. Unique to VSMF is its masterful organization of product and specification data, its indexing system, which is copyrighted, and its marketing practices which spread the costs in easily absorbable chunks to both the suppliers and users of product data (often different segments of the same organization). The following description is certainly not presented as VSMF would describe itself, since it is definitely slanted towards aspects pertinent to Army plans, especially RODATA plans, for the QDRI Program.

Collection of Data

VSMF sells its services to commercial industrial organizations who supply data for microfilming. A five page questionnaire is used, which is more elaborate than the SF 129, the DD Form 558-1, and the first page of the DD Form 558-2, combined. However, it does not go into the classification detail provided by the DD Form 558-2 and the new R&D Capability Index. The submitting organization uses its own terminology to describe capabilities and interests in three separate sections of the questionnaire (see Appendix 3). This form is reproduced in the VSMF file. Standard vendor catalog data is also supplied in support of the data on the questionnaire. The services and products of the vendor are indexed by VSMF according to its copyrighted index system. In general, the questionnaire and catalog data are updated annually. Except that QDRI data is formatted differently, great similarity is clearly evident in the submission of questionnaire and catalog (brochure) data, and annual updating.

Microfilming Operations

The fine details of the microfilming process for the regular VSMF operations are not of great importance here. Later in this report a detailed discussion of the QDRI operations is provided. The original master microfilm, always retained by VSMF, is a standard photographic emulsion negative process operation. From this master, diazo prints are made with great rapidity, to supply subscribers with microfilm cartridges. Each microfilm cartridge unit is given a distinctive number, which is used in the VSMF printed index for locating selected data. Each product and each vendor are indexed to the unit in which they appear.

Use of the Microfilm

The normal designer search operation is to look in the printed index for desired products, then locate that group of products in specified cartridges. When the products that satisfy design requirements have been located, if desired, the designer can refer to the vendor's questionnaire in another cartridge for data to use in preparing a purchase specification.

For the proposed QDRI cartridges, it appears most feasible initially to file registered organization capability data alphabetically by registrants' names. Ultimately the QDRI supporting data, catalogs, and brochures will be indexed by means of the R&D Capability Index, as it comes into general use. Initially indexing by capabilities will appear only in the printed index published with each cartridge edition, and will utilize the terminology appearing in the DD Form 558-2 classification scheme. As registrations are updated using the new R&D Capability Index, actual file indexing of capabilities according to subject categories, equivalent to the present VSMF product indexing, will be instituted.

Integration of VSMF Questionnaires and QDRI Forms

As the QDRI Microfilming project approaches the point where all initial microfilming of existing files has been accomplished, there will be a requirement for VSMF to prepare a combined resurveying activity which would possibly use both the type of data in the present

VSMF questionnaire (see Appendix 3) and the Army's R&D Capability Index survey forms (see Appendices 1 and 2). At least for those organizations who are interested in both VSMF and QDRI a combined operation appears feasible, and should satisfy industry requests for reduction in government related surveys.

Methods for Selling VSMF and the QDRI Microfilm

The VSMF normal operations are financed in two ways. Although VSMF does add certain selected types of data to the files without charge, in general each vendor makes a small annual payment, based on a page rate, for the inclusion of his product catalog data. In addition, each subscriber pays for the microfilm cartridges he receives. The annual charge for this ordinarily includes complete quarterly replacement of all cartridges, although this does not mean that all data in each cartridge is changed quarterly. Based on FY 1966 prices the cost of three standard VSMF files, exclusive of the reader-printer would be:

- (1) Vendor Selector Edition - \$2,552
- (2) OEM Edition - \$4,230
- (3) Defense Edition - \$4,106

Reference may be made to the VSMF Authorized Federal Supply Schedule, FSC Group 67, Part IV, Photographic Equipment Contract No. GS-00S-60369 for descriptions of file contents.

QDRI FUTURE REQUIREMENTS

The plan for QDRI data files microfilming is to film all of the data obtainable from the deactivated Army procurement districts, supplemented by data from command and installation files, until as complete a record is obtained as possible for the identification of organizations who have ever been registered in the QDRI program, and their

status at the time of filming. Simultaneously, it is anticipated that the organization registration files of the RODATA will be brought up to date and that full coordination can be achieved between VSMF and RODATA. During this same period Army registrations using the new DOD/NASA format for the R&D Capability Index will be initiated, so that during the last phase of microfilm development it should be possible for micro-filming (VSMF), data processing (RODATA), and automated bidders list operations (CAPS)⁵ to become completely interchangeable.

When this point is reached it is expected that civilian organization registrations will be conducted as follows:

1. Registration packages consisting of a letter of instructions, mission statements on all commands, laboratories and installations, and the R&D Capability Index will be made available to all DCASR and Army small business specialists, industry liaison offices, and other offices involved in the preparation of R&D source lists. These offices will become referral agencies both to the QDRI program and the Army's procurement activities.

2. In general, each organization registering will send completed copies of its registration package to all appropriate major Army procurement offices, as advised by the referral agency with which it dealt. These offices will include the Northwest and Southwest Procurement Agencies and should include the procurement detachments, as long as they remain active. In addition, one copy of the registration will be sent to the RODATA and one to VSMF.

3. There will be communication between RODATA and VSMF, on a daily basis if necessary, to coordinate registration data. It is considered possible that eventually all organizations recorded on any Army R&D source list will be represented on VSMF cartridges.

4. It will be the responsibility of VSMF to obtain, index, and microfilm all types of catalog data. The new instructions supplementing the SF 129 for R&D source list data provides for minimum submission of supporting data with the registration package (see Appendix 1).

⁵CAPS is the Army Data System called Command Automated Procurement System.

Pilot Microfilming Task

As mentioned previously, the first experimental microfilming operation involved the files of the Boston Procurement District. This work was issued to VSMF from Hqs., USAMC, through the Harry Diamond Laboratories, under Purchase Order PO-49-186-06-17879 on 23 June 1966. The Boston file was shipped from Natick Laboratories in eight cartons. In addition, three cartons of files from Frankford Arsenal representing Boston district registered organizations were delivered. Both sets of cartons are merged at Englewood and the most up-to-date data was selected from both.

The following guidance was given for selection and ordering of desired data:

"The basic qualifications data file on each QDRI registered organization will be reproduced on film in a microfilm cartridge library system for use as a visual search microfilm file, and will be made available in a system similar in use to the VSMF Vendor Selector presently supplied by Information Handling Services, Inc. (IHS), under GSA Contract GS-00S-50567. Each file will consist of the following minimum segments:

- a. Government forms (DD Form 558-2 series, or equivalent) providing the areas of interest and capabilities of registered organizations.
- b. Individual resumes or profiles of key scientific and technical personnel.
- c. Descriptions of research and development facilities (buildings, test areas, equipment) of registered organizations.
- d. Listings of recent and current contracts related to claimed areas of capability.
- e. Brief descriptions of related "in-house" research and development efforts.
- f. An accurate copy of the latest valid policy agreement for the QDRI program, or earlier related program (US Army R&D Problems Guide, or Army Study Requirements, etc.).

g. A statement signed by an Army representative verifying the organizations's security status, accuracy of items a to f, above, the name and correct address of the organization's QDRI Coordinator, any special condition established by the registered organization in its registrations, and a list of AMC installations holding the registration."

This guidance was developed for VSMF cartridges in the following six groups:

1. Facility Security Status
2. Latest Valid Policy Agreement
3. DD Form 558-2 Series or Equivalent
4. Resume and Profiles
5. Listings of Contracts
6. Descriptive Catalog Pages.

Figure 2 shows the form of the index at the start of each QDRI cartridge listing these six elements across the top of the index. The referral on the matrix is to the microfilm frame on which the desired data starts. Figures 3 to 8 show the standardized header sheets which start these sections (The frame number (F/N) does not appear on the original film, but as an indicator between frames, e.g., 0101.) Technical review during the course of execution of the pilot order led to the conclusion that the header form for the first section of data was unsatisfactory. It was later changed to the title "Registered Organization Verification Status", and its format, slightly different from those of the other sections, is shown by figure 9.

There were four microfilm cartridges developed from the combined Boston district files. These contain the records on 118 active organizations. In addition, VSMF prepared a printed index which had the following sections:

1. Alphabetic list of active registered organizations.
2. Alphabetic list of inactive and dropped organizations.

I N S T R U C T I O N S

for use of

Q D R I F I L M E D I N D E X

Each QDRI registrant's information has been separated into the following six categories for quick and easy access and retrieval:

1. FACILITY SECURITY STATUS
2. LATEST VALID POLICY AGREEMENT
3. FORM 554-2 SERIES OR EQUIVALENT
4. RESUMES AND PROFILES
5. LISTINGS OF CONTRACTS
6. DESCRIPTIVE CATALOG PAGES

The number appearing in each column is the beginning film frame number for that category.

P L E A S E N O T E

All six categories for a single QDRI registrant are sequentially filed.

COMPANY NAME	FORM 554-2 SERIES						DESCRIPTIVE CATALOG PAGES
	1	2	3	4	5	6	
ADCO	100	103	106	111	123	126	
AIR TECHNOLOGY CORPORATION	128	130	133	160	177	179	
ALLIED RESEARCH ASSOCIATES INCORPORATED	192	164	197	236	286	339	
AMERICAN BOSCH ARMA CORPORATION	361	363	366	382	386	394	
AMERICAN MAGNETIC AND FOUNDRY COMPANY	388	390	393	441	443	445	
AMERICAN OPTICAL COMPANY	447	449	452	476	483	486	
AMERICAN SCIENCE AND ENGINEERING INCORPORATED	488	490	493	521	560	563	
ANCO TECHNICAL WRITING SERVICES	565	567	570	575	577	584	
ANDERSON-NICHOLS AND COMPANY	586	588	591	636	673	685	
ARCON (ADVANCED RESEARCH CONSULTANTS)	687	689	692	721	727	729	
ARMSTRONG RUBBER COMPANY	731	733	736	740	742	744	
AVCO CORPORATION, RESEARCH AND ADVANCED DEVELOPMENT DIVISION	746	748	751	786	814	816	
AVCO RESEARCH LABORATORIES	818	820	823	871	917	920	
AVIDRE RESEARCH INCORPORATED	922	924	927	952	961	963	
BARKLEY AND DEXTER LABORATORIES INCORPORATED	965	967	970	993	1004	1006	
BAKES ENGINEERING CORP.	1008	1010	1013	1077	1128	1138	
BIO-DYNAMICS INCORPORATED	1243	1246	1249	1295	1301	1303	

Organizational data has been divided into the following categories:

Figure 2. QDRI Cartridge Index Format

[illegible]

R-1
 Geography
 Army Reserve & Outpost No. 2
 Redstone Arsenal, Alabama
 22 MI. OUTPOST, PLANS
 100-21100
 100-21100
 100-21100

- a. an official copy of a Seller Agreement Form FDS, duly executed and dated 30 October 1958 (Ind. A)
- b. designated fields of interest and capabilities (Ind. B)
- c. currently held security clearance of "Top Secret" through Boston Air Force Command as of 22 Oct 1955
- d. The designated individual qualified to receive Confidential Information

TOP SECRET

C. V. Brown
Address: 1100 11th Ave
Phone: Garryan 7-0111

3. This office has reviewed and evaluated all information presented and recommended this report and on the receipt of CTR in the area of 1970-1971 1972-1973 1974-1975 1976-1977 1978-1979 1980-1981 1982-1983 1984-1985 1986-1987 1988-1989 1990-1991 1992-1993 1994-1995 1996-1997 1998-1999 2000-2001 2002-2003 2004-2005 2006-2007 2008-2009 2010-2011 2012-2013 2014-2015 2016-2017 2018-2019 2020-2021 2022-2023 2024-2025 2026-2027 2028-2029 2030-2031 2032-2033 2034-2035 2036-2037 2038-2039 2040-2041 2042-2043 2044-2045 2046-2047 2048-2049 2050-2051 2052-2053 2054-2055 2056-2057 2058-2059 2060-2061 2062-2063 2064-2065 2066-2067 2068-2069 2070-2071 2072-2073 2074-2075 2076-2077 2078-2079 2080-2081 2082-2083 2084-2085 2086-2087 2088-2089 2090-2091 2092-2093 2094-2095 2096-2097 2098-2099 2100-2101 2102-2103 2104-2105 2106-2107 2108-2109 2110-2111 2112-2113 2114-2115 2116-2117 2118-2119 2120-2121 2122-2123 2124-2125 2126-2127 2128-2129 2130-2131 2132-2133 2134-2135 2136-2137 2138-2139 2140-2141 2142-2143 2144-2145 2146-2147 2148-2149 2150-2151 2152-2153 2154-2155 2156-2157 2158-2159 2160-2161 2162-2163 2164-2165 2166-2167 2168-2169 2170-2171 2172-2173 2174-2175 2176-2177 2178-2179 2180-2181 2182-2183 2184-2185 2186-2187 2188-2189 2190-2191 2192-2193 2194-2195 2196-2197 2198-2199 2200-2201 2202-2203 2204-2205 2206-2207 2208-2209 2210-2211 2212-2213 2214-2215 2216-2217 2218-2219 2220-2221 2222-2223 2224-2225 2226-2227 2228-2229 2230-2231 2232-2233 2234-2235 2236-2237 2238-2239 2240-2241 2242-2243 2244-2245 2246-2247 2248-2249 2250-2251 2252-2253 2254-2255 2256-2257 2258-2259 2260-2261 2262-2263 2264-2265 2266-2267 2268-2269 2270-2271 2272-2273 2274-2275 2276-2277 2278-2279 2280-2281 2282-2283 2284-2285 2286-2287 2288-2289 2290-2291 2292-2293 2294-2295 2296-2297 2298-2299 2300-2301 2302-2303 2304-2305 2306-2307 2308-2309 2310-2311 2312-2313 2314-2315 2316-2317 2318-2319 2320-2321 2322-2323 2324-2325 2326-2327 2328-2329 2330-2331 2332-2333 2334-2335 2336-2337 2338-2339 2340-2341 2342-2343 2344-2345 2346-2347 2348-2349 2350-2351 2352-2353 2354-2355 2356-2357 2358-2359 2360-2361 2362-2363 2364-2365 2366-2367 2368-2369 2370-2371 2372-2373 2374-2375 2376-2377 2378-2379 2380-2381 2382-2383 2384-2385 2386-2387 2388-2389 2390-2391 2392-2393 2394-2395 2396-2397 2398-2399 2400-2401 2402-2403 2404-2405 2406-2407 2408-2409 2410-2411 2412-2413 2414-2415 2416-2417 2418-2419 2420-2421 2422-2423 2424-2425 2426-2427 2428-2429 2430-2431 2432-2433 2434-2435 2436-2437 2438-2439 2440-2441 2442-2443 2444-2445 2446-2447 2448-2449 2450-2451 2452-2453 2454-2455 2456-2457 2458-2459 2460-2461 2462-2463 2464-2465 2466-2467 2468-2469 2470-2471 2472-2473 2474-2475 2476-2477 2478-2479 2480-2481 2482-2483 2484-2485 2486-2487 2488-2489 2490-2491 2492-2493 2494-2495 2496-2497 2498-2499 2500-2501 2502-2503 2504-2505 2506-2507 2508-2509 2510-2511

FOR THE COMPLAINANT:

[illegible]

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F/P 0101

2160

Figure 3. Header Sheets and Sample Data, Section 1

**NORM 888-2 SERIES
OR
EQUIVALENT**

07647.

07647.

[illegible]

Figure 5. Header Sheets and Sample Data, Section 3

4

RESUMES AND PROFILES

PRO WFO Date
076A7

F/N 0120

ALLEN BRADSHAW ASSOCIATES, INC.



SECTION 10, MASSACHUSETTS

DR. PHILIP GOODMAN

Dr. Philip Goodman, Senior Scientist, is a member of the staff of the Materials Department and is presently engaged in studies of the relationship between the mechanical behavior of materials and their molecular structure. His research interests include the study of the effect of molecular weight, molecular weight distribution, and molecular structure on the flow behavior of semicrystalline polymers. Other research interests include the study of the effect of molecular weight, molecular weight distribution, and molecular structure on the dynamic mechanical behavior of polymers.

Dr. Goodman received a Bachelor of Arts Degree from New York University in 1941. After serving with the Air Force during World War II, during part of which time he was an instructor in Chemistry, he attended the University of Chicago where he received a Master of Science Degree. Subsequent academic training was undertaken at the Ohio State University where he held several research fellowships as well as teaching appointments. His research was concerned with the structure of polycrystalline materials in solution. A Doctor of Philosophy degree in physical chemistry was awarded in 1951.

Upon graduation, Dr. Goodman joined the staff of the National Bureau of Standards where he was a project leader doing research on the rheological properties, molecular structure, and kinetics of macromolecular degradation of synthetic polymers. He then joined the staff of the National Bureau of Standards of the U. S. Naval Research Laboratory where he was head of the Rheology and Properties Section. His research interests were concerned with the relationship of molecular structure and semi-crystallinity to relaxation processes and flow behavior of solution esters.

In 1955, Dr. Goodman joined the Corning Glass Works where he supervised a group and performed research concerned with a wide variety of properties of silicate glasses and glass-ceramics. These included studies of relaxation behavior of glasses in the transition regions, viscous properties of glasses at high temperatures, dynamic mechanical studies of relaxation and growth, phase transformation occurring in semi-crystalline glasses and kinetics of crystallization induced upon the physical properties of an amorphous system.

Dr. Goodman has published several technical papers and, during his tenure at Corning Glass Works, lectured to several local sections of scientific societies. He is a member of the American Chemical Society, American Physical Society, Society of Rheology and American Association for the Advancement of Science.

PRO WFO Date
076A7

F/N 0191

Figure 6. Header Sheets and Sample Data, Section 4

5

LISTINGS
OF
CONTRACTS

Best Available Copy

Contract Description	Year Awarded	Client
Turboprop airliner evaluations	1955	American Airlines
Development of a liquid analog of the atmosphere	1955	Air Force Research Division, Geography Research Directorate
Evaluation of the Burnell CBV-3 aircraft	1955	Air Trends, Incorporated
Vibration isolation system for Shipper	1955	Massachusetts Institute of Technology, Instrumentation Laboratory
LABS delivery studies	1955	Wright Air Development Division, Weapons Guidance Laboratory
Analysis, design, development and testing of very fast response bolometer to measure thermal radiation	1955	Air Force Research Division, Geography Research Directorate
Heat transfer problem	1955	Cambridge Corporation
Specialized studies in the utilization of high energy fuels for long range aircraft	1955	Cambridge Corporation
Vibrations analysis of 5 liter Dewar flask	1956	Cambridge Corporation
Development of vibration isolation system for Thor guidance equipment	1956	AC Spert Plug
Fabrication of Spire vibration isolators (4)	1956	Massachusetts Institute of Technology, Instrumentation Laboratory
Shock and vibration analysis of 15 gallon Dewar flask	1956	Cambridge Corporation
Design and development of reproducible and measuring micrites (Wad-Sonde System)	1956	Wright Air Development Division, Aerial Reconnaissance Laboratory
Dynamic analysis of TV tower	1956	Magnesium Products of Milwaukie
Development and fabrication of a radiation monitoring system	1956	Yankee Atomic Electric Company

750 Wg. Code
U7647

F/N 0194

750 Wg. Code
U7647

Figure 7. Header Sheets and Sample Data, Section 5

DESCRIPTIVE CATALOG PAGES

F/N 0179

98187

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strobelastricity.....

STROBELASTICITY is the extension of stroboscopic lighting to a transient photostatic event which can be repeated periodically analogous to the manner in which strob. lighting is used to "stop" periodic motion such as rotation of a shaft or oscillation of a piston. In such case, a short duration flash illuminates an incident in a cycle of a repeated event. In SE the repeated event is an impact stress wave which is generated, propagated, and finally decays within the period of repetition of the event. The illumination reveals the character of the transient photostatic fringe pattern at the instant of the flash.

Except for the fact that a repeated transient event is being viewed directly, there is no essential difference in illumination principles between SE and stroboscopic analysis of rotating machinery. Frequency matching of stress and impact produces a still picture of any chosen phase difference, while slight differences in frequency permit visualization of the onset of a repeatedly reduced speed, the time scale of which is spectrophotically capable of infinite resolution. Figure 1 through 5 reveal sequences of stress patterns in representative photostatic models during propagation of impact stress waves.

SE provides a variable magnification in comparison with other dynamic photostatic procedures, which utilize high speed cameras and special light sources and which require the use of photographic lenses. They do not provide the large visualizations available with SE. Furthermore, fringe sharpness is frequently lost, and the exposure intervals may be too large to obtain continuous visualization of the moving wave thereby requiring a "strob" lens to cover the event properly. As a result, considerable time may be expended on study of a single problem.

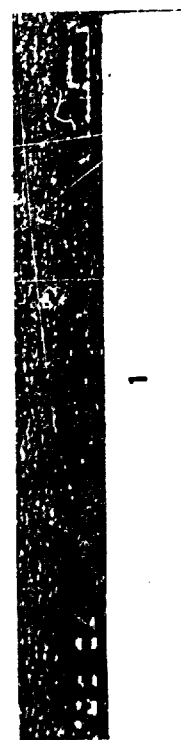
FLEXIBILITY

One of the major features of SE is the fact that the impact event can be viewed directly by the investigator who thereby has complete control of the particular experiment at all times, as well as access to the system experimental arrangement in Figure 6. Furthermore, the design of the fringes is controlled by varying direct illumination of fringe areas of any location at any time. These features permit operation of an impact investigation in SE with the same manner and employing basically the same techniques as in static photostaticity.

F/N 0179

F/N 0216

Figure 8. Header Sheets and Sample Data, Section 6



REGISTERED ORGANIZATION VERIFICATION STATUS

FSC CODE: 7947
 FACILITY: ALLIED RESEARCH ASSOCIATES INCORPORATED
 VERMONT ROAD
 CHICAGO, ILLINOIS 60606
 VERIFICATION OF RECORDS-RECORD

COORDINATOR: E. P. STUBBS
 DIRECTOR OF CONTRACTS
 22 - 617-344-0000

ORIGINAL REGISTRATION: POSTS PROCEEDMENT FIDELITY (1959)
 QUALIFICATION DATED BY NO FORM 514-2, dated June 14, 1965

PRIMARY QUALIFICATION AGENCY: AMMER IS ARMY MATERIALS RESEARCH AGENCY

ADDITIONAL REGISTRATIONS:
 ANSEL IN ARMY ELECTRONICS COMMAND
 ANSEL IN ARMY MISSILE COMMAND
 ANSEL IN ARMY AVIATION MATERIAL COMMAND
 ANSEL IN ARMY MISSILE ENGINEERING COMMAND
 ANSEL IN ARMY TANK AUTOMOTIVE COMMAND
 ANSEL IN ARMY ARTILLERY COMMAND
 ANSEL IN ARMY MEDICAL COMMAND
 ANSEL IN ARMY TEST & EVALUATION COMMAND

F/N 0100
 FSC Wfr Code
 07647



6

DESCRIPTIVE CATALOG PAGES FACILITIES - EXPERIENCE - CAPABILITIES PRODUCTS

F/N 0201
 FSC Wfr Code
 07647

Figure 9. Revised Header Sheets, Sections 1 and 6

3. Index of research and development capabilities (not printed).

The cartridges were provided in two sets, to fit both the Recordak and Filmac reader-printers. Demonstrations of these cartridges were provided at the NSIA meeting in Washington, D. C. on 6 October 1966, and the annual meeting of the Association of the U. S. Army during 10 to 12 October 1966. The pilot purchase order operations are described in a final report from Information Handling Services, Inc., dated 25 October 1966, titled "Information Handling Services Report and Recommendations on The Qualitative Development Requirements Information File Produced for the U. S. Army Materiel Command". This report is to be reworked slightly and published for distribution to all QDRI managers and to the Defense Documentation Center.

REVIEW OF PILOT TEST RESULTS

It has already been mentioned that a change in the title and format of the first section of each organization's file was made. This change was to "Registered Organization Verification Status".

It was made during a process inspection at Englewood on 22 and 23 September 1966. At the same time the title of section six was changed from "Descriptive Catalog Pages" to "Descriptive Catalog Pages

Facilities - Experience - Capabilities

Products".

Some other minor changes were also made as mentioned in the VSMF 25 October 1966 report:

1. The index cover was reprinted to show that data came from the Boston Procurement District.

2. Both VSMF and QDRI were shown on all frames on the platen header. The Boston file was identified as "Issue No. 1".

3. Page 2 of the DD Form 558-2 was filmed only once in the front matter of each film cartridge. This is the page providing the instructions for use of the form.

4. Some rearrangement was made in the material filmed for each section. For instance, considerable material which VSMF had placed in Section 3 as equivalent to Form 558-2 data, was removed to Section 6, to be placed under the subtitle "Capabilities".

These changes were all incorporated in an extra set of cartridges, one Recordak and one Filmac, for just one Boston facility. Key frames from this are reproduced in Appendix 4.

In general, the results obtained in the pilot test form a satisfactory base for the continuation of the microfilming program. The final sample provided by Cartridge 5 appears to be very close to the format desired by the Army.

There is one major exception to the existing concept that now appears obtainable. With the completion of the combined DOD/NASA R&D Capability Index based on the COSATI Subject Categories, it now become possible to index interests and capabilities uniformly by an automated system. It is therefore recommended that Section 6 data from the descriptive catalog pages be indexed and filmed in the order of the R&D Capability Index. This, of course, will change somewhat the plans that VSMF has made, but it should not appreciably delay the program, or add materially to its costs.

PROPOSED VSMF PROCEDURE FOR QDRI FILES

Section III of the VSMF final report on the QDRI Pilot Test, pages 5 to 8, gives the Information Handling Services recommendations for expanded microfilm activities and estimated costs for the total operation. These recommendations are based on the assumption that all active and inactive QDRI files from the former Army procurement districts will be transferred to Englewood, Colorado for sorting, processing, indexing, and microfilming. Figure 10 provides a flow chart of the VSMF proposed procedure.

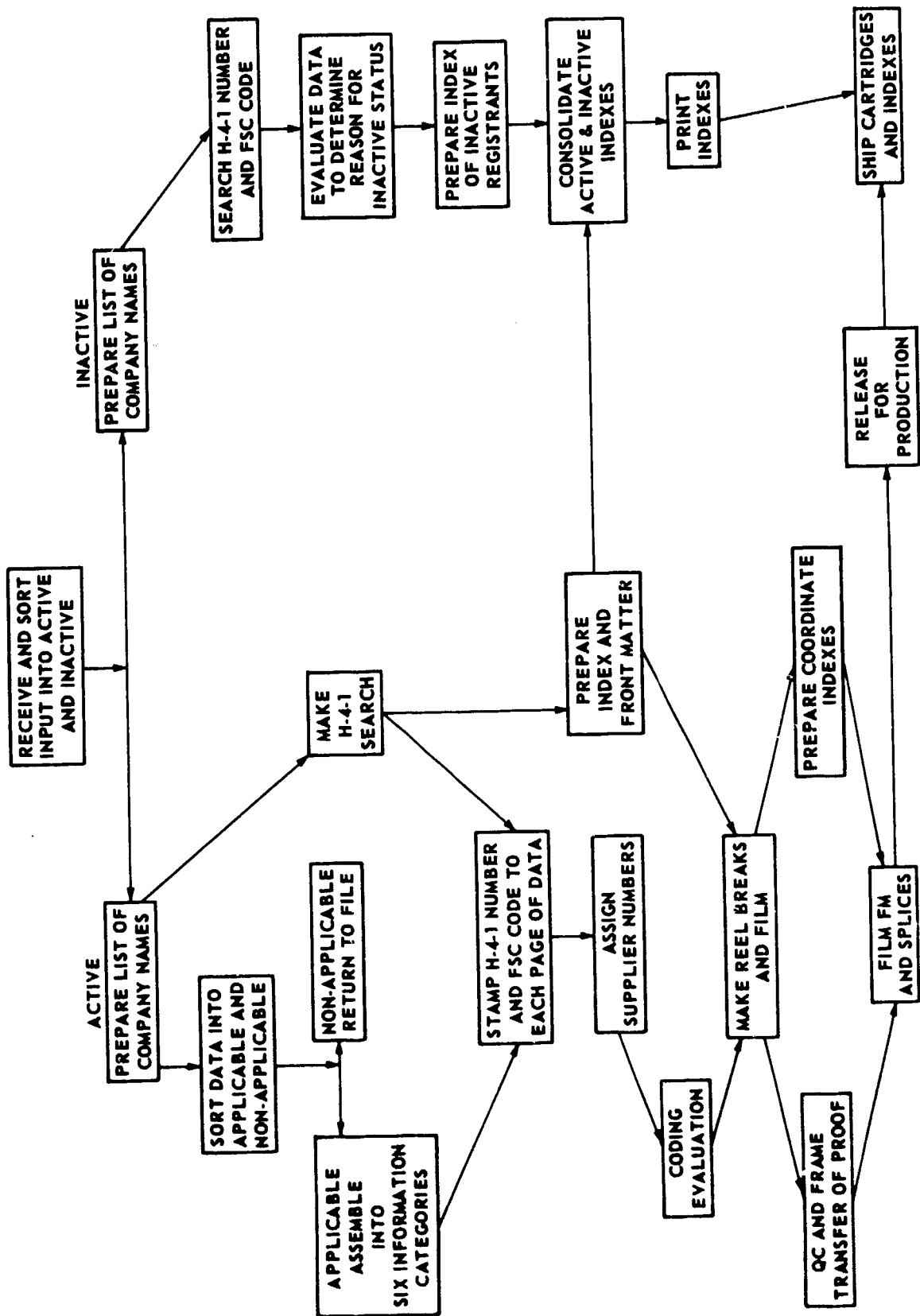


Figure 10. Flow Chart - VSMF Proposed Procedure

Based on the Boston district test the costs for microfilming the expanded file are estimated for handling the files from twelve locations or groups: Birmingham, Boston, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, Philadelphia, Rochester, New York, San Francisco, and St. Louis. Chicago, Cincinnati, and New York represent active Procurement Detachments in the Army Materiel Command. The New York Detachment is also holding the Philadelphia and Rochester files. Los Angeles and San Francisco have become the Southwest and Northwest Procurement Agencies, respectively. At all of the other procurement district locations the activities have been transformed into DCASR offices. The status of QDRI files at Birmingham, Cleveland, and St. Louis is very nebulous. VSMF has estimated that there will be approximately 1,298 active registered organizations and 3,113 inactive organizations. Initial filming and preparation of printed index master copy will cost about \$35,500.00, based on the above assumption. Diazo reproduction film cartridges, and printed indexes for each QDRI office in the Army Materiel Command will cost about \$250.00 each; and based on an estimated possibility of 40 locations this cost would be \$10,000.00. The total initial estimated cost of the microfilming program would therefore be \$45,500.00.

This is not the entire consideration. Not all QDRI offices would want microfilm, at least not immediately. Also, not all locations have cartridge reader-printers readily available. The rental of a reader-printer is quoted at \$864.00 a year, and its purchase direct is about \$2,700.00. Neither of these figures includes supplies of paper, developer, and other incidental items required with a reader-printer.

The VSMF plan includes referencing of the printed index to both the VSMF Defense and Vendor Selector files for QDRI organizations represented therein. Also, training sessions in the use of the system will be conducted at each using location by contractor personnel.

VSMF has not made any firm estimate on the costs for keeping files updated on a quarterly basis, to match updating of the Vendor Selector and Defense files. It is suggested that the unit costs used for active registered organizations would be approximately correct.

ARMY RECOMMENDATIONS FOR CONTINUING PROGRAM

There are still several matters to be negotiated between the Army and the supplier. Practically all are either development of firm procurement requirements, or definitive prices for all requirements, which will have to be negotiated by a contracting officer. This entire report and the VSMF report of 25 October, 1966 will together form the basis for the total procurement. The following major points, most of which have already been discussed herein, will provide the major points of procurement requirements:

1. Microfilming will be accomplished to match existing VSMF files, and will include all organizations registered in the QDRI program by 30 June 1967. Files may be arranged completely alphabetically, but should also illustrate, either in the cartridge format, or the printed index, the original district arrangement of registrations.

2. In addition to indexing by organization name, alphabetically, indexing will be performed by subject categories in fields of interest (disciplines, capabilities, experience, facilities, and products) according to the R&D Capability Index based on the COSATI Subject Categories.

3. A questionnaire will be designed and tested in actual use to obtain regular updating of microfilmed data.

4. Hqtrs., US Army Materiel Command, through the AMC QDRI Data Files Program Action Officer, will finance the initial filming of each organization now on file, and others as they come into the program. The basic contract will also cover the purchase of microfilm reel sets at six to eight major QDRI activities. The microfilming company will be expected to execute separate sales contracts for microfilm cartridge sets with all other QDRI offices. Ultimately, VSMF should be able to develop a financing system similar to that now operating with the VSMF Defense and Vendor Selector files.

5. VSMF will develop specific criteria for the selection and indexing of catalog and brochure data.

6. Liaison will be continually maintained with the master organization registration data file in the RODATA at Frankford Arsenal. Toward this end, in order to achieve data compatibility, the RODATA

will provide VSMF with print-outs of registration listings, clear copies of the latest policy agreement, and H4-1 FSC manufacturers codes or other identification codes and data, as required.

7. Close coordination will also be maintained with other contractors providing technical publications services for the RODATA, and programming or other software.

8. VSMF, RODATA, and RODATA contractors will develop joint publicity programs. Each organization will finance its own fair share of such programs.

9. An equitable arrangement will be negotiated by the government and VSMF for the use of VSMF copyrighted material. VSMF will not be allowed to copyright indexes, systems, or data formats which are of government preparation, collection, or design.

10. The QDRI cartridges should be identified by a Q-series of numbers.

Finally, it is important that all activities involved in the QDRI data process should be guided by a uniform, although somewhat flexible, procedure. The outline of this procedure is presented in flowchart format by figure 11. The main actions illustrated are

1. Inquiry by new registrant
2. Explanation of procedure, referral office
 - a. Distribution of registration package
 - b. Referral to appropriate agencies
3. Preparation and forwarding of registration documents
4. Qualification by USAMC QDRI offices
5. Addition of registration to RODATA master file
6. Addition of data to VSMF file
7. Comparison and reconciliation of RODATA and VSMF

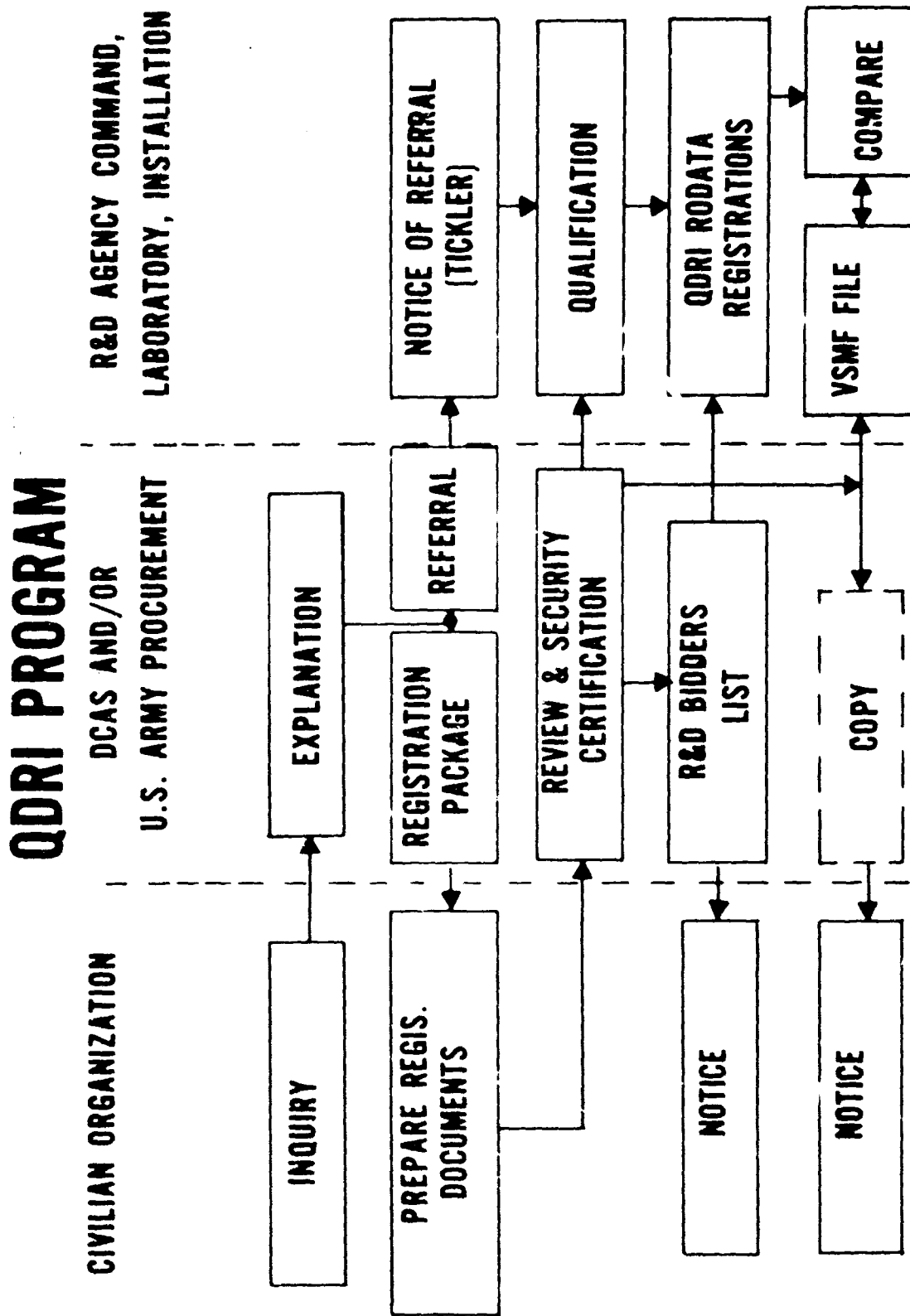


Figure 11a. Flow Chart - QDRI Data Procedure, Registration

QDRI PROGRAM

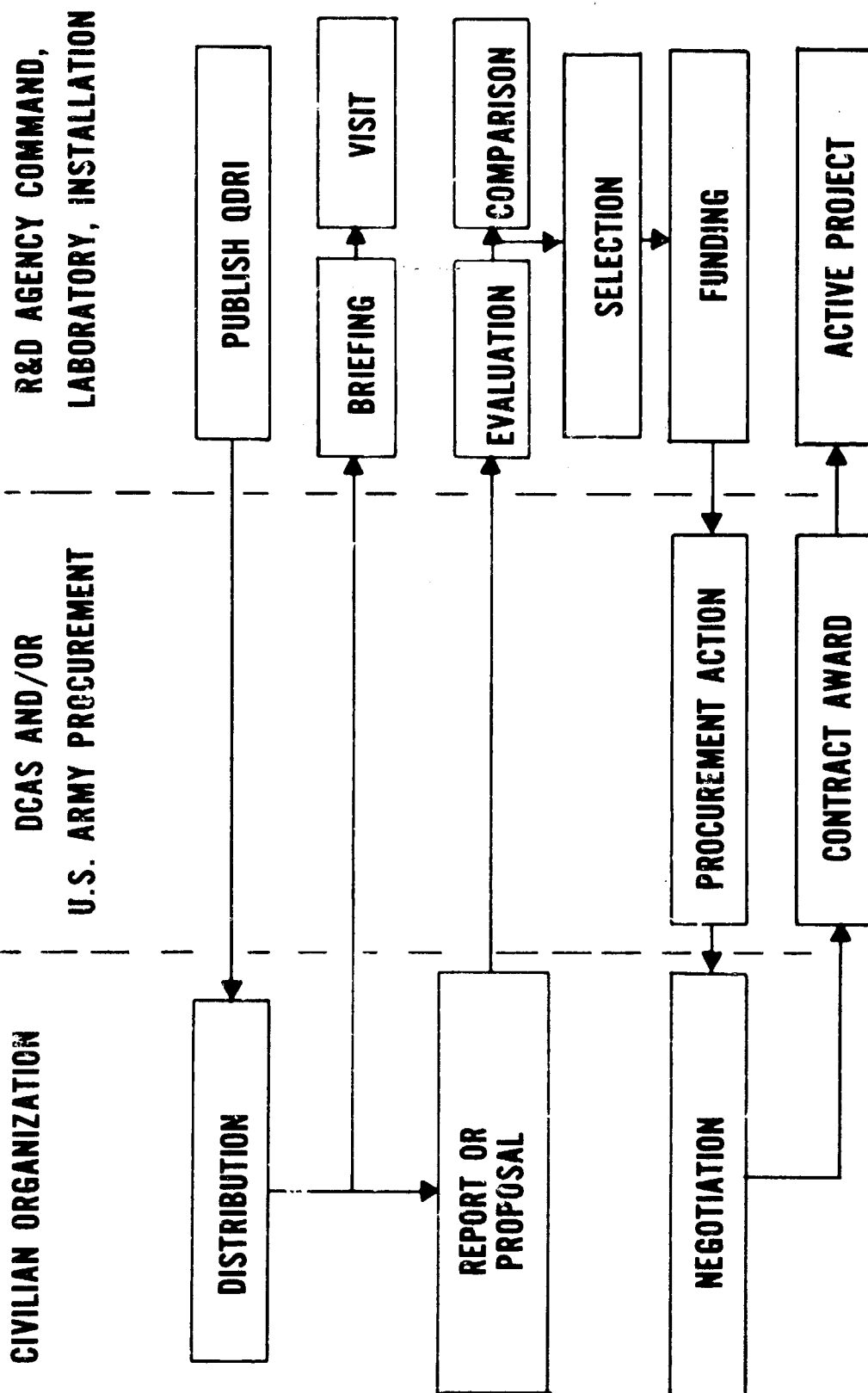


Figure 11b. Flow Chart - QDRI Data Procedure, Distribution

8. Preparation of QDRI items
9. Distribution of QDRI publications
10. Project and task QDRI briefings
11. Preparation of reports and proposals
12. Distribution of reports and proposals
13. Evaluation of reports and proposals
14. Comparison of old and new proposals
15. Selection of most likely results
16. Determination of appropriate funding
17. Initiation of procurement action
18. Award of definitive contract

CONCLUSION

The VSMF microfilming activity is recognized as a good currently operating workable solution for the storage and retrieval of QDRI documentation. It is probably not the ultimate system that will be associated with QDRI. The Army's scientific and technical information program is studying other methods, especially those associated with computer-oriented retrieval systems. However, none of the attractive methods are yet operational. The VSMF operation is commercially available and satisfies present QDRI needs.

REFERENCES

1. AMCR 70-19, 13 October 1964
2. QDRI Volume I, January 1965
3. Contract GS-00S-60369
4. VSMF report, 25 October 1966

APPENDIX 1
FRANKFORD ARSENAL REPORT R-1838
INSTRUCTIONS FOR
R&D CAPABILITY INDEX USE

Presented to the ASPR Committee
by ASPR Subcommittee, Case 66-151, on
30 January 1967



**UNITED STATES ARMY MATERIEL COMMAND
R&D CAPABILITY INDEX**

**INSTRUCTIONS FOR PREPARING SUPPLEMENT
TO STANDARD FORM 129**

**for
R&D BIDDERS LISTS OR
INFORMATION PROGRAMS**

NAME OF APPLICANT	DATE
In designating your organization's technical fields of capability (see attached R&D Capability Index), indicate only those fields in which you possess technical competence. It is to your advantage to take a realistic approach regarding your capabilities. Each area of capability indicated is reviewed and an unrealistic approach based on interest and not capability will only delay evaluation of your source data. Indicate by check mark the category of competence your organization has, such as "research," "exploratory development," etc. Definitions are set forth in ASPR 4-201. Documentation Your supporting documentation should be arranged and indexed in the same number sequence as the technical fields, as set forth in the attached R&D Index, and is expected to describe the capabilities of your technical personnel, R&D facilities, and in-house and contractual project experience. In general, it is anticipated that an average of five pages of documentation are appropriate for each field. Brevity of submission will insure expeditious handling. For example: Personnel: Will include the names and brief statement of scientific and technical background and achievements of your leading R&D personnel who may be principal investigators or project officers for R&D contracts. List each person only once even though his ability may pertain to more than one technical field. Facilities: Will include brief description of all major physical facilities for research and development. List each physical facility only once even though it may pertain to more than one technical field of interest and may be used by several organizational groups. Identify each facility by name and location. Give name and telephone number of person to contact for further information. Detailed equipment lists are not desired. Experience: Data which is particularly desired is: A brief description of recent and/or current government and company sponsored R&D programs (will include applicable	



UNITED STATES ARMY MATERIEL COMMAND
R&D CAPABILITY INDEX
INSTRUCTIONS FOR PREPARING SUPPLEMENT
TO STANDARD FORM 129
for
R&D BIDDERS LISTS OR
INFORMATION PROGRAMS

NAME OF APPLICANT	DATE
contract number and total dollar value of each contract listed), and major breakthroughs in the state-of-the-art you have accomplished. SF 129 and the attached R&D Index Form, including the required documentation, will constitute all source data necessary for an R&D source list. Any additional information, such as organizational brochures, folders, flyers, and pictures, are not acceptable. This does not preclude submission of Annual Reports or Financial Statements, which are desired. To assure retention of your organization in our R&D source files, it is required that you update previously submitted information at least once a year. Minor changes may be submitted informally to the requesting agency. NOTE: If your organization possesses capabilities in five or less fields, your documentation should not exceed 20-25 pages. If your organization possesses capability in all, or almost all, of the fields, <u>no more</u> than 100 pages of documentation will be accepted. <u>DEFINITIONS OF RDT&E CATEGORIES</u> The type of effort which research and development organizations devote to specific technical fields is to be shown in one or more of the following six categories: <u>Research</u> - which is the acquisition of knowledge and the quantitative understanding of phenomena. This category includes basic and applied research in the physical, biological, environmental, medical, behavioral, social, management, informational and engineering sciences including the technical means for obtaining the knowledge. <u>Exploratory Development</u> - which is demonstration by experiment of the technical feasibility of alternative inventive concepts. Exploratory development may concern itself with materials, components, processes, equipment, subsystems or systems, and may encompass any of three distinct types of effort: a. Experimental exploitation and refinement of known phenomena.	



UNITED STATES ARMY MATERIEL COMMAND
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NAME OF APPLICANT	DATE
b. Development of technologies responsive to a class of systems, or broad end-item needs. c. Preliminary system studies responsive to a particular problem. These studies should explore the potential operational utility and the technical feasibility of alternative generic solutions to the problem. These preliminary studies may include system analyses, tradeoff, preliminary cost/effectiveness studies and planning and programming studies. <u>Advanced Development</u> - which is demonstration of the acceptability of the technical, economic, and operational characteristics of one or more specific concepts considered as solutions to a clearly stated problem or technical objective. It requires synthesis and construction of experimental hardware for acceptability demonstration of the concepts. This hardware is not developed for procurement, inventory, or operational deployment. Advanced development may concern itself with materials, components, processes, equipment, subsystems or systems. <u>Engineering Development</u> - which is the final development and test of a materiel item judged to be operationally, technically, and economically desirable and acceptable as a solution to a problem or to a technical objective. This category produces what have been generally known as the R&D pilot or engineering test pre-production models. Engineering development may concern itself with materials, components, processes, equipment, subsystems or systems. This category may include Engineering Development-type effort on separately identified major product improvement to inventory or to in-development materiel items. <u>Operational Development</u> - which is the final engineering for production, producibility demonstration, and final service test of a materiel item approved for limited procurement to inventory and operational deployment. It supplements engineering development effort with a production engineering, producibility demonstration effort. Operational development may include the production design and building of preproduction prototypes on final tooling, utilizing all production processes and test equipment designated or designed and fabricated during Operational Development for full-scale production. Testing accomplished within this category's effort should concern the qualification of the production process and data as well as the final service qualification test for operation. This category may include operational development type effort on separately identified or aggregated major product improvements to materiel items in the inventory.	



UNITED STATES ARMY MATERIEL COMMAND
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for
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INFORMATION PROGRAMS

NAME OF APPLICANT	DATE
or may include both engineering and operational development type effort on minor product improvements. A primary output of this category is the preparation and demonstration through limited pre-production of a complete, accurate, and tested data package for operational use, logistic support, maintenance and for possible competitive reprocurement and breakout. <u>Management and Support</u> - which are those general-purpose and multi-usage efforts and items to support the functions of research, development, test, and engineering. Emphasis in this category will be on multi-usage support activities. Items whose support is divisible into the elements of the other RDT&E categories will be included in those category elements. Examples of the type of items intended for management and support include the operations and maintenance of activities such as test ranges, test aircraft and ships and information support services as well as operational and maintenance support of government in-house laboratories.	



**UNITED STATES ARMY MATERIEL COMMAND
R&D CAPABILITY INDEX
INSTRUCTIONS FOR PREPARING SUPPLEMENT
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for
R&D BIDDERS LISTS OR
INFORMATION PROGRAMS**

NAME OF APPLICANT	DATE
Local installation or commodity center instructions as required by the registering agency may be added here.	

BIDDER'S MAILING LIST APPLICATION

INITIAL APPLICATION

REVISION

All answers should be typed or printed. See reverse for information and instructions.

TO:

DATE OF THIS APPLICATION

1. NAME OF APPLICANT

2. ADDRESS TO WHICH BIDDING FORMS ARE TO BE MAILED

3. ADDRESS OF MAIN BUSINESS OFFICE

4. HOW LONG IN PRESENT BUSINESS

5. TYPE OF ORGANIZATION (Check one)

☐ INDIVIDUAL

☐ PARTNERSHIP

☐ CORPORATION

6. IF INCORPORATED, INDICATE IN WHICH STATE

7. NAMES OF OFFICERS, MEMBERS OR OWNERS OF CONCERN, PARTNERSHIP, ETC.

(A) PRESIDENT

(B) VICE PRESIDENT

(C) SECRETARY

(D) TREASURER

(E) OWNERS OR PARTNERS

8. AFFILIATED CONCERNS (Name, location, and in detail, controlling interest in each)

9. PERSONS OR CONCERNS AUTHORIZED TO SIGN BIDS AND CONTRACTS IN YOUR NAME (If agent, so specify)

NAME

OFFICIAL CAPACITY

10. PERSONS TO CONTACT ON MATTERS CONCERNING BIDS AND CONTRACTS (If agent, so specify)

NAME

OFFICIAL CAPACITY

TELEPHONE NO.

11. INDICATE CLASSES OF EQUIPMENT, SUPPLIES, MATERIAL, AND/OR SERVICES ON WHICH YOU DESIRE TO BID (Use attached list, if any)

12. CATEGORY (See definitions on the reverse of this form and check below the category which applies to the applicant)

☐

(A) MANUFACTURER OR PRODUCER

☐

(C) REGULAR DEALER (Type 2)

☐

(B) REGULAR DEALER (Type 1)

☐

(D) SERVICE ESTABLISHMENT

13. NUMBER OF PERSONS NOW EMPLOYED

14. FLOOR SPACE (Square feet)

15. NET WORTH

MANUFACTURING

WAREHOUSE

DATE

AMOUNT

16. THIS SPACE FOR USE BY THE GOVERNMENT

17. I certify that the information supplied herein (including all pages attached) is correct and that neither the applicant nor any person (or concern) in any connection with the applicant as a principal or officer, so far as is known, is now debarred or otherwise declared ineligible by any agency of the Federal Government from bidding for furnishing materials, supplies or services to the Government or any agency thereof.

SIGNATURE OF PERSON AUTHORIZED TO SIGN THIS APPLICATION

18. NAME AND TITLE OF PERSON SIGNING (Please type or print)

INFORMATION AND INSTRUCTIONS

Persons or concerns wishing to be added to a particular agency's bidder's mailing list for supplies or services shall file this properly completed and certified Bidder's Mailing List Application, together with such other lists as may be attached to the application form, with each procurement office of the Federal agency with which they desire to do business. *The application shall be submitted and signed by the principal as distinguished from an agent, however constituted.*

After placement on the bidder's mailing list of an agency, a supplier's failure to respond (*submission of bid, or notice in writing that you are unable to bid on that particular transaction but wish to remain on the active bidder's mailing list for that particular item*) to Invitations for Bids will be understood by the agency to indicate lack of interest and concurrence in the removal of the supplier's name from the purchasing activity's bidder's mailing list for the items concerned.

CATEGORY DEFINITIONS

(See Item No. 12)

- A. MANUFACTURER OR PRODUCER means a person (*or concern*) owning, operating, or maintaining a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment of the general character of those listed in item No. 11.
- B. REGULAR DEALER (*Type 1*) means a person (*or concern*) who owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment of the general character listed in item No. 11 are bought, kept in stock, and sold to the public in the usual course of business.
- C. REGULAR DEALER (*Type 2*) in the case of supplies of particular kinds (*at present, petroleum, lumber and timber products, coal, machine tools, raw cotton, green coffee, or hay, grain, feed, and straw*) "REGULAR DEALER" means a person (*or concern*) satisfying the requirements of article 101 (b) of the regulations, as amended from time to time, prescribed by the Secretary of Labor under the Walsh-Healey Public Contracts Act (41 U. S. Code 35-45).
- D. SERVICE ESTABLISHMENT means a concern (*or person*) which owns, operates, or maintains any type of business which is principally engaged in the furnishing of nonpersonal services, such as (*but not limited to*) repairing, cleaning, redecorating, or rental of personal property, including the furnishing of necessary repair parts or other supplies as part of the services performed.

U. S. GOVERNMENT PRINTING OFFICE 1963 O-696-386

APPENDIX 2

FRANKFORD ARSENAL REPORT R-1838

DOD - ARMY/AIR FORCE/NAVY - NASA
COMMITTEE FOR MACHINE CODABLE SUBJECT MATTER
EXPANDED COSATI CATEGORY LIST
SCIENTIFIC AND TECHNOLOGICAL LANGUAGE

Presented to the ASPR Committee
by ASPR Subcommittee, Case 66-151, on

30 January 1967

RESEARCH & DEVELOPMENT CAPABILITY INDEX											
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST											
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT	
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT		
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE	
1										AERONAUTICS	
1	1									AERODYNAMICS	
1	1	1								AERO-ACOUSTICS	
1	1	2								AERODYNAMIC DECELERATION	
1	1	3								AERUELASTICITY	
1	1	4								DECELERATION TECHNOLOGY	
1	1	5								DESIGN AND TEST	
1	1	6								EXPERIMENTAL AERODYNAMICS	
1	1	7								EXTERNAL STORE SEPARATION	
1	1	8								FLUTTER	
1	1	9								HYDRODYNAMICS	
1	1	10								HYPERSONIC AERODYNAMICS	
1	1	11								INTERNAL AERODYNAMICS	
1	1	12								LOADS AND HINGE MOMENTS	
1	1	13								PERFORMANCE	
1	1	14								RE-ENTRY AERODYNAMICS	
1	1	15								SIMULATION	
1	1	16	1							SPECIAL AERODYNAMIC PROBLEMS	
1	1	16	2							AERODYNAMIC DRAG, PROFILE DRAG	
1	1	16	3							BOUNDARY LAYER CONTROL, ACTIVE-PASSIVE	
1	1	16	4							BUFFETING	
1	1	16	5							CONTROL SURFACES	
1	1	16	6							DEFLATED SLIPSTREAM	
1	1	16	7							FRICTIONAL HEATING	
1	1	16	8							LAMINAR FLOW- TURBULENT FLOW	
1	1	16	9							SHOCK WAVES	
1	1	16								STABILITY AUGMENTATION SYSTEMS	
1	1	17								STABILITY AND CONTROL	
1	1	18								SUBSONIC AERODYNAMICS	
1	1	19								SUPersonic AERODYNAMICS	
1	1	20								THEORETICAL AERODYNAMICS	
1	1	21								TRANSONIC AERODYNAMICS	
1	1	22								TRANSPIRATION COOLING	
1	1	23								TRANSPORTATION COOLING	

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RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
1	1	2	4							WIND TUNNELS
1	2									AERONAUTICS
1	2	1								AIRDROP AND AIRDROP CONTROL SYSTEMS
1	2	1	1							AIRDROP SYSTEM TECHNIQUES
1	2	1	2							AIRDROP SYSTEMS (AFRODYNAMICS)
1	2	1	3							COMPONENTS (AIRDROP SYSTEMS)
1	2	2								CARGO RESTRAINT
1	2	3								ENVIRONMENTAL SIMULATION
1	2	4								FLIGHT OPERATING PROBLEMS
1	2	4	1							AIRCRAFT NOISE AND VIBRATION-SHIELDING AND ATTENUATION
1	2	4	2							EFFECTS OF DOWNWASH
1	2	4	3							ENVIRONMENTAL PROTECTION FOR CREW AND EQUIPMENT
1	2	4	4							ENVIRONMENTAL SIMULATOR STUDIES
1	2	4	5							EXTERNAL CARGO-WEIGH-BALANCE, G LOAD
1	2	4	6							ICE FORMATION-DETECTION AND REMOVAL
1	2	4	7							RANGE EXTENSION
1	2	4	8							RECOVERY AND EVACUATION SYSTEMS
1	2	4	9							SHORT TAKE-OFF AND LANDING
1	2	4	10							STATIC ELECTRICITY
1	2	4	11							TRANSITION FLIGHT
1	2	4	12							VERTICAL TAKE-OFF AND LANDING
1	2	5								FLIGHT SAFETY
1	2	5	1							CRASH FIRE
1	2	5	2							CRASH LANDING
1	2	5	3							OPERATIONAL PRACTICES AND PROCEDURES
1	2	5	4							TURBULENCE AND GUSTS
1	2	5	5							VISIBILITY FACTORS
1	2	6								FLIGHT TEST
1	2	7								GROUND OPERATIONS AND TRAFFIC CONTROL
1	2	8								IMPACT SHOCK (AIRCRAFT)
1	2	9								PARACHUTE THEORY
1	2	9	1							CARGO PARACHUTES
1	2	9	2							PERSONNEL PARACHUTES
1	3									AIRCRAFT
1	3	1								AIRCRAFT STRUCTURES
1	3	1	1							FUSELAGES
1	3	1	2							LANDING GEAR
1	3	1	3							SPECIAL PROBLEMS (AIRCRAFT)
1	3	1	4							WING AND EMPENNAGE
1	3	2								AIRFRAME BEARINGS
1	3	3								AIRFRAME DESIGN
1	3	3	1							FATIGUE
1	3	3	2							STRUCTURAL DESIGN
1	3	3	3							VIBRATION AND FLUTTER
1	3	4								CARGO RESTRAINT SYSTEMS

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RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE
1	4	5								CONFIGURATION DESIGN
1	3	6								CONTROL SYSTEM DESIGN
1	3	7								CREW ESCAPE DESIGN
1	3	8								CRYOGENICS
1	3	9								DAMAGE ASSESSMENT
1	3	10	1							DESIGN-PRODUCTION CYCLE
1	3	10	2							AIR DELIVERY VEHICLES
1	3	10	3							AIRPLANES
1	3	10	4							COMPOUND HELICOPTERS
1	3	10	4							HELICOPTERS
1	3	11								ELECTRO-MECHANICAL INSTALLATIONS
1	3	12								ENGINE AND FUEL SYSTEM INSTALLATIONS
1	3	13								ENVIRONMENTAL CONTROL
1	3	14								ENVIRONMENTAL PROTECTION
1	3	15								ENVIRONMENTAL TESTS
1	3	16								EXTERNAL STORE STRUCTURAL INTEGRITY
1	3	17								FLIGHT PATHS
1	3	18	1							FUEL EQUIPMENT AND ACCESSORIES
1	3	18	2							AIRCRAFT FUEL TANKS
1	3	18	3							CARBURETORS- CARBURETOR PARTS
1	3	18	4							FUEL LINES (AIRCRAFT)
1	3	18	5							PUMPS
1	3	18	6							STRAINERS
1	3	18	6							VALVES
1	3	19								HANDLING QUALITIES
1	3	20								LAUNCH AND RECOVERY GEAR DESIGN
1	3	21								LIGHTER-THAN-AIR DESIGN
1	3	22								MAINTENANCE
1	3	23	1							MISCELLANEOUS
1	3	23	2							AIRCRAFT ESCAPE SYSTEMS
1	3	23	3							BREATHING OXYGEN EQUIPMENT
1	3	23	4							EJECTION SEATS-CAPSULES
1	3	23	5							PARACHUTES
1	3	23	6							PERSONNEL RESTRAINT SYSTEMS
1	3	23	7							SEATS, LITTERS
1	3	23	8							WINCHES AND HOISTS (AIRCRAFT)
1	3	23	8							WINDSHIELD WIPERS (AIRCRAFT)
1	3	24								RACKS AND PYLONS
1	3	25								STRUCTURAL ANALYSIS

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RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
1	2	3	4	1	2	3	4	5	6	SCOPE
1	3	25	1							AEROELASTIC ANALYSIS
1	3	25	2							DYNAMIC LOADS ANALYSIS
1	3	25	3							FATIGUE ANALYSIS
1	3	25	4							SONIC FATIGUE ANALYSIS
1	3	25	5							STATIC STRUCTURAL ANALYSIS
1	3	26								STRUCTURAL TEST
1	3	27								SYSTEM DESIGN AND ANALYSIS
1	3	28								SYSTEMS GROUND TEST
1	3	29								TEST MODELS
1	3	30								VULNERABILITY STUDIES
1	3	31								WEIGHT CONTROL
1	4									AIRCRAFT FLIGHT INSTRUMENTATION
1	4	1								AIR DATA INSTRUMENTATION
1	4	2	1							AIRCRAFT AIR MASS INSTRUMENTS
1	4	2	2							ALTIMETERS, BAROMETRIC
1	4	2	3							AIR SPEED
										VERTICAL SPEED
1	4	3								AIRCRAFT ENGINE INSTRUMENTS
1	4	3	1							FLOW METER
1	4	3	2							TEMPERATURE INSTRUMENT
1	4	3	3							THRUSTMETER
1	4	4								AIRCRAFT GYROSCOPIC INSTRUMENTS
1	4	4	1							DIRECTION
1	4	4	2							FLIGHT REFERENCE SYSTEMS
1	4	4	3							RATE
1	4	4	4							VERTICAL AND ATTITUDE
1	4	5								AUTOMATIC CONTROL
1	4	6								DATA PRESENTATION AND RECORDING
1	4	7								FLIGHT INSTRUMENTS
1	4	7	1							FLIGHT CONTROL INSTRUMENTATION
1	4	7	2							FLIGHT RESEARCH INSTRUMENTS
1	4	7	3							FLIGHT TESTS (INSTRUMENTATION)
1	4	8								LIFE SUPPORT AND INSTRUMENTATION
1	4	9								MISCELLANEOUS AIRCRAFT INSTRUMENT EQUIPMENT
1	4	9	1							ACCELEROMETER, INDICATING
1	4	9	2							AUTOPILOTS
1	4	9	3							CLOCKS
1	4	9	4							FLIGHT CONTROL DISPLAYS
1	4	9	5							PRESSURE MEASUREMENT
1	4	9	6							STABILITY AUGMENTORS
1	4	10								SAFETY AND COMFORT FACTORS
1	4	11								SYSTEM PERFORMANCE INSTRUMENTATION

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
1	5									AIR FACILITIES
1	5	1								AIRCRAFT GROUND SUPPORT
1	5	1	1							AUTOMATIC INSPECTION SYSTEMS
1	5	1	2							MAINTENANCE PROCEDURES, TECHNIQUES, METHODS
1	5	1	3							MAINTENANCE TOOLS AND EQUIPMENT
1	5	1	4							SERVICING EQUIPMENT AND SYSTEMS
1	5	1	5							TEST AND CHECK-OUT EQUIPMENT
1	5	2								AIRPORTS
1	5	2	1							AIRCRAFT HANDLING EQUIPMENT
1	5	2	2							AIRCRAFT MAINTENANCE EQUIPMENT
1	5	2	3							CONTROL TOWERS
1	5	2	4							FLIGHT DISPLAYS, COMPUTERS
1	5	2	5							HANGERS
1	5	2	6							LANDING FIELDS
1	5	5								FLIGHT DISPLAYS, DEVICES
1	5	6								FLIGHT TEST SUPPORT

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLOITATION	DEVELOPMENT	MANAGEMENT	ENGINEERING	OPERATIONAL	DEVELOPMENT	MANAGEMENT	SUPPORT
2												AGRICULTURE
2	1											AGRICULTURAL CHEMISTRY
2	2											AGRICULTURAL ECONOMICS
2	3											AGRICULTURAL ENGINEERING
2	4											AGRONOMY AND HORTICULTURE
2	5											ANIMAL HUSBANDRY
2	6											FORESTRY

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
3										ASTRONOMY AND ASTROPHYSICS		
3	1									ASTRONOMY		
3	1	1								ASTROGRAPHY		
3	1	2								ASTRONOMICAL CONSTANTS AND DISTANCE-SCALES		
3	1	3								ASTRONOMICAL OBSERVATORIES		
3	1	4								CELESTIAL NAVIGATION		
3	1	5								COMETS, METEORIDS, METEORS AND DUST		
3	1	6								MOON, PLANETS, AND ASTEROIDS		
3	1	7								RADAR ASTRONOMY		
3	1	8								SELENOGRAPHY		
3	1	9								SOLAR PHENOMENA		
3	2									ASTROPHYSICS		
3	2	1								COMPOSITION OF STARS AND INTERSTELLAR MATTER		
3	2	2								COSMOLOGY		
3	2	3								ELECTROMAGNETIC AND CORPUSCULAR RADIATIONS		
3	2	4								EVOLUTION OF STARS AND GALAXIES		
3	2	5								GRAVITATIONAL, MAGNETIC AND ELECTRIC FIELDS		
3	2	6								GUIDANCE TRACKING		
3	2	8								LUNAR AND PLANETARY ATMOSPHERE		
3	2	9								LUNAR AND PLANETARY SCIENCES		
3	2	9	1							CARTOGRAPHY		
3	2	9	2							GEODESY		
3	2	9	3							GEOGRAPHY		
3	2	9	4							GEOLOGY AND MINERALOGY		
3	2	9	5							SOIL MECHANICS		
3	2	9	6							TERRESTRIAL MAGNETISM		
3	2	10								METEORIDS		
3	2	10	1							ENVIRONMENT		
3	2	10	2							IMPACT		
3	2	11								PARTICLES AND FIELDS		
3	2	11	1							AURORA		
3	2	11	2							MAGNETIC FIELDS		
3	2	11	3							RADIATION BELT		
3	2	11	4							SOLAR TERRESTRIAL INTERACTIONS		
3	2	11	5							VAN ALLEN BELTS		
3	2	12								INTERSTELLAR SPACE		

RESEARCH & DEVELOPMENT CAPABILITY INDEX											
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST											
CODE NO				CATEGORY				NAME AND ADDRESS OF AGENCY			
1	2	3	4	5	6	7	8	9	10	11	12
SCOPE											
2											AGRICULTURE/FORESTRY
2	1										AGRICULTURAL CHEMISTRY
2	2										AGRICULTURAL FOUNDATIONS
2	3										AGRICULTURAL ENGINEERING
2	4										AGRICULTURAL MECHANICS
2	5										AGRICULTURAL PHYSICS
2	6										AGRICULTURAL BIOLOGY
2	7										AGRICULTURAL ECONOMICS
2	8										AGRICULTURAL POLICY
2	9										AGRICULTURAL SOCIOLOGY
2	10										AGRICULTURAL HISTORY
2	11										AGRICULTURAL LITERATURE
2	12										AGRICULTURAL ARTS
2	13										AGRICULTURAL SCIENCE
2	14										AGRICULTURAL TECHNOLOGY
2	15										AGRICULTURAL INNOVATION
2	16										AGRICULTURAL RESEARCH
2	17										AGRICULTURAL DEVELOPMENT
2	18										AGRICULTURAL POLICY
2	19										AGRICULTURAL ECONOMICS
2	20										AGRICULTURAL SOCIOLOGY
2	21										AGRICULTURAL HISTORY
2	22										AGRICULTURAL LITERATURE
2	23										AGRICULTURAL ARTS
2	24										AGRICULTURAL SCIENCE
2	25										AGRICULTURAL TECHNOLOGY
2	26										AGRICULTURAL INNOVATION
2	27										AGRICULTURAL RESEARCH
2	28										AGRICULTURAL DEVELOPMENT
2	29										AGRICULTURAL POLICY
2	30										AGRICULTURAL ECONOMICS
2	31										AGRICULTURAL SOCIOLOGY
2	32										AGRICULTURAL HISTORY
2	33										AGRICULTURAL LITERATURE
2	34										AGRICULTURAL ARTS
2	35										AGRICULTURAL SCIENCE
2	36										AGRICULTURAL TECHNOLOGY
2	37										AGRICULTURAL INNOVATION
2	38										AGRICULTURAL RESEARCH
2	39										AGRICULTURAL DEVELOPMENT
2	40										AGRICULTURAL POLICY
2	41										AGRICULTURAL ECONOMICS
2	42										AGRICULTURAL SOCIOLOGY
2	43										AGRICULTURAL HISTORY
2	44										AGRICULTURAL LITERATURE
2	45										AGRICULTURAL ARTS
2	46										AGRICULTURAL SCIENCE
2	47										AGRICULTURAL TECHNOLOGY
2	48										AGRICULTURAL INNOVATION
2	49										AGRICULTURAL RESEARCH
2	50										AGRICULTURAL DEVELOPMENT
2	51										AGRICULTURAL POLICY
2	52										AGRICULTURAL ECONOMICS
2	53										AGRICULTURAL SOCIOLOGY
2	54										AGRICULTURAL HISTORY
2	55										AGRICULTURAL LITERATURE
2	56										AGRICULTURAL ARTS
2	57										AGRICULTURAL SCIENCE
2	58										AGRICULTURAL TECHNOLOGY
2	59										AGRICULTURAL INNOVATION
2	60										AGRICULTURAL RESEARCH
2	61										AGRICULTURAL DEVELOPMENT
2	62										AGRICULTURAL POLICY
2	63										AGRICULTURAL ECONOMICS
2	64										AGRICULTURAL SOCIOLOGY
2	65										AGRICULTURAL HISTORY
2	66										AGRICULTURAL LITERATURE
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2	71										AGRICULTURAL RESEARCH
2	72										AGRICULTURAL DEVELOPMENT
2	73										AGRICULTURAL POLICY
2	74										AGRICULTURAL ECONOMICS
2	75										AGRICULTURAL SOCIOLOGY
2	76										AGRICULTURAL HISTORY
2	77										AGRICULTURAL LITERATURE
2	78										AGRICULTURAL ARTS
2	79										AGRICULTURAL SCIENCE
2	80										AGRICULTURAL TECHNOLOGY
2	81										AGRICULTURAL INNOVATION
2	82										AGRICULTURAL RESEARCH
2	83										AGRICULTURAL DEVELOPMENT
2	84										AGRICULTURAL POLICY
2	85										AGRICULTURAL ECONOMICS
2	86										AGRICULTURAL SOCIOLOGY
2	87										AGRICULTURAL HISTORY
2	88										AGRICULTURAL LITERATURE
2	89										AGRICULTURAL ARTS
2	90										AGRICULTURAL SCIENCE
2	91										AGRICULTURAL TECHNOLOGY
2	92										AGRICULTURAL INNOVATION
2	93										AGRICULTURAL RESEARCH
2	94										AGRICULTURAL DEVELOPMENT
2	95										AGRICULTURAL POLICY
2	96										AGRICULTURAL ECONOMICS
2	97										AGRICULTURAL SOCIOLOGY
2	98										AGRICULTURAL HISTORY
2	99										AGRICULTURAL LITERATURE
2	100										AGRICULTURAL ARTS

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
4										ATMOSPHERIC SCIENCES		
4	1									ATMOSPHERIC PHYSICS		
4	1	1								AERONOMY		
4	1	2								AEROLOGY		
4	1	3								AEROSOL AND CLOUD PHYSICS		
4	1	4								ATMOSPHERIC ELECTRICITY		
4	1	5								ATMOSPHERIC OPTICS		
4	1	6								ATMOSPHERIC STRUCTURE AND COMPOSITION		
4	1	6	1							IONOSPHERE		
4	1	6	2							STRATOSPHERE		
4	1	6	3							TROPOPAUSE		
4	1	6	4							TROPOSPHERE		
4	1	6	5							UPPER ATMOSPHERE		
4	1	7								AURORA AND AIRGLOW		
4	1	7	1							NIGHT SKY		
4	1	7	2							SKY BRIGHTNESS		
4	1	7	3							TWILIGHT		
4	1	7	4							ZODIACAL LIGHT		
4	1	8								CHEMICAL PROPERTIES (ATMOSPHERIC)		
4	1	8	1							ATMOSPHERE		
4	1	8	2							ATMOSPHERE MODELS		
4	1	9								COSMIC RAYS		
4	1	10								ENERGETIC PARTICLES (ATMOSPHERIC)		
4	1	10	1							ATMOSPHERIC ELECTRICITY		
4	1	10	2							IONOSPHERIC DISTURBANCES		
4	1	10	3							LIGHTNING		
4	1	11								IONIC AND NEUTRAL PARTICLE INTERACTIONS		
4	1	12								IONOSPHERIC PHYSICS		
4	1	13								MODEL ATMOSPHERES		
4	1	14								MOON AND PLANETARY ATMOSPHERES		
4	1	15								PHYSICAL PROPERTIES (ATMOSPHERIC)		
4	1	15	1							ATMOSPHERE ENTRY		
4	1	15	2							ATMOSPHERIC CONDENSATION		
4	1	15	3							ATMOSPHERIC MOTION		
4	1	15	4							ATMOSPHERIC PRECIPITATION		
4	1	15	5							ATMOSPHERIC TIDES		
4	1	15	6							ATMOSPHERICS		
4	1	15	7							CLOUDS		
4	1	15	8							DAWN CHORUS		
4	1	15	9							JET STREAMS (METEOROLOGY)		
4	1	15	10							NOCTILUCENT CLOUDS		
4	1	16								SOLAR RADIATION		

RESEARCH & DEVELOPMENT CAPABILITY INDEX											
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST											
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT	
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MOVEMENT AND SUPPORT		
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE	
4	1	17								SOLAR - TERRESTRIAL PHYSICS	
4	2									METEOROLOGY	
4	2	1								AERONAUTICAL METEOROLOGY	
4	2	2								ARCTIC METEOROLOGY	
4	2	2	1							ATMOSPHERIC TEMPERATURE	
4	2	2	2							BAROMETRIC PRESSURE	
4	2	2	3							CEILING	
4	2	2	4							DEW	
4	2	2	5							DEW POINT	
4	2	2	6							GUSTS	
4	2	2	7							HAZE	
4	2	2	8							HURRICANE TRACKING	
4	2	2	9							MARINE METEOROLOGY	
4	2	2	10							METEOROLOGICAL PHENOMENA	
4	2	2	11							MICROBAROMETRIC WAVES	
4	2	2	12							STRATUS CLOUDS	
4	2	2	13							WIND (METEOROLOGY)	
4	2	3								AUTOMATIC WEATHER STATIONS	
4	2	3	1							AUTOMATIC LANDBASED (RADIO TRANSMITTER)	
4	2	3	2							AUTOMATIC SEABASED (RADIO TRANSMITTER)	
4	2	3	3							PORTABLE	
4	2	4								CLIMATOLOGY	
4	2	5								DYNAMIC METEOROLOGY	
4	2	6								HEAT TRANSFER, AIR AND SOIL TEMPERATURES	
4	2	7								METEOROLOGICAL BALLOONS	
4	2	8								METEOROLOGICAL ROCKETS	
4	2	9								METEOROLOGICAL SATELLITES	
4	2	10								METEOROLOGICAL SENSORS	
4	2	11								NUMERICAL WEATHER FORECASTING	
4	2	12								PHYSICAL METEOROLOGY	
4	2	13								RADIOSONDES (RECEPTORS AND RECORDERS)	
4	2	14								RAWIN SETS	
4	2	15								STORMS, HURRICANES, TORNADOES, ETC.	
4	2	16								SYNOPTIC METEOROLOGY	
4	2	17								TROPICAL METEOROLOGY	
4	2	18								WATER VAPOR	
4	2	19								WEATHER FORECASTING	
4	2	19	1							HAIL	
4	2	19	2							HURRICANES	
4	2	19	3							ICE FOG	

RESEARCH & DEVELOPMENT CAPABILITY INDEX													
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST													
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT			
				1	2	3	4	5	6				
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	SYSTEMS DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE			
4	2	14	4							DATA FALL			
4	2	14	5							SNOW			
4	2	14	6							THUNDERSTORM			
4	2	14	7							TROPICAL CYCLONES			
4	2	20								WEATHER MODIFICATION			
4	2	20	1							ANTICYCLONES			
4	2	20	2							ARTIFICIAL PRECIPITATION			
4	2	20	3							RAIN DROPS			
4	2	21								WEATHER PATTERNS AND FORECASTING			
4	2	22								WEATHER STATIONS			
4	2	22	1							ANEMETERS			
4	2	22	2							BAROMETERS			
4	2	22	3							HYGROMETERS			
4	2	22	4							HYPSOMETER			
4	2	22	5							LAPSE RATE			
4	2	22	6							METEOROLOGICAL BALLONS			
4	2	22	7							METEOROLOGICAL BATTERIES			
4	2	22	8							METEOROLOGICAL CHARTS			
4	2	22	9							METEOROLOGICAL INSTRUMENTS			
4	2	22	10							METEOROLOGICAL PARAMETERS			
4	2	22	11							PYRHELIOMETERS			
4	2	22	12							RADIOSONDES			
4	2	22	13							VERTICAL GUST RECORDERS			
4	2	24								WIND SYSTEMS			

RESEARCH & DEVELOPMENT CAPABILITY INDEX

SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPERIMENTAL DEVELOPMENT	CONCEPT DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE
5										BEHAVIORAL AND SOCIAL SCIENCES
5	1									ADMINISTRATION AND MANAGEMENT
5	1	1								ACCOUNTING
5	1	2								BUDGETING
5	1	3								CLERICAL STAFF
5	1	4								DATA MANAGEMENT
5	1	5								DEPARTMENT MANAGEMENT
5	1	6								OPERATIONS (MANAGEMENT)
5	1	7								ORGANIZATION COORDINATION
5	1	8								PRODUCTION PLANNING
5	1	9	1							PROGRAM MANAGEMENT
5	1	9	2							CONFIGURATION MANAGEMENT
5	1	9	2							OPERATIONS ANALYSIS
5	1	10								PUBLIC RELATIONS
5	1	11								TECHNICAL STAFF
5	2									DOCUMENTATION AND INFORMATION TECHNOLOGY
5	2	1								ACQUISITION, DISTRIBUTION, DISSEMINATION OF RECORDED INFORMATION
5	2	2								CATALOGING, INDEXING, ABSTRACTING
5	2	3								INFORMATION STORAGE AND RETRIEVAL
5	2	4								LIBRARY SCIENCE
5	2	5								TECHNICAL ILLUSTRATION
5	2	6								TECHNICAL WRITING AND EDITING
5	2	7								TERMINOLOGY, DICTIONARIES, THESAURI
5	3									ECONOMICS
5	3	1								BANKING AND FINANCE
5	3	2								ECONOMETRICS
5	3	3								ECONOMIC HISTORY
5	3	4								ECONOMIC THEORY
5	3	5								INTERNATIONAL RELATIONS, ECONOMICS
5	4									HISTORY, LAW AND POLITICAL SCIENCE
5	4	1								INTERNATIONAL RELATIONS, POLITICS
5	4	2								THEORY AND PRACTICE OF GOVERNMENT

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RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
5	5									HUMAN FACTORS ENGINEERING
5	5	1								ANTHROPOMETRY
5	5	2								DESIGN OF TOOLS, INSTRUMENTS, EQUIPMENT, AND MACHINERY
5	5	3								EQUIPMENT DESIGN FOR OPTIMUM UTILIZATION
5	5	4								WORK AND LIVING SPACE DESIGN
5	5	4	1							COCKPIT AND CREW-TROOP AREA GEOMETRY
5	5	4	2							COCKPIT CONTROL ACTUATORS
5	5	4	3							COMMUNICATION DEVICES
5	5	4	4							ENTRY AND EGRESS FACILITIES
5	5	4	5							FATIGUE ANALYSES
5	5	4	6							INDICATOR POSITIONING
5	5	4	7							PILOT RESPONSE EVALUATION
5	5	4	8							PSYCHOLOGICAL EFFECTS
5	5	4	9							SAFETY HAZARDS
5	5	4	10							WARNING DEVICES
5	6									HUMANITIES
5	6	1								ART
5	6	2								DRAMA
5	6	3								MUSIC
5	6	4								PHILOSOPHY
5	6	5								RELIGION
5	7									LINGUISTICS
5	7	1								MACHINE TRANSLATION
5	7	2								MATHEMATICAL LINGUISTICS
5	7	3								STUDY OF LANGUAGES
5	8									MAN-MACHINE RELATIONS
5	8	1								FLIGHT STRESS FACTORS
5	8	2								HUMAN PERFORMANCE STUDIES
5	8	3								HUMAN PILOT DYNAMIC
5	8	4								INFORMATION DISPLAYS DESIGN
5	8	5								MANUAL CONTROLS DESIGN
5	9									PERSONNEL SELECTION, TRAINING, AND EVALUATION
5	9	1								EDUCATIONAL VOCATIONAL TRAINING
5	9	2								INDUSTRIAL RELATIONS
5	4	3								MILITARY TRAINING INDOCTRINATION

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RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
										SCOPE
1	1	1	4							TRAINING DEVICES SURFACE LAUNCHED MISSILES
1	1	2	4	1						COMMAND AND CONTROL
1	1	3	4	2						COMPLETE ROCKET SYSTEM
1	1	4	4	3						OPERATOR
1	1	5	4	4						MAINTENANCE
1	1	6	4	5						TRAINING FILMS
5	1	5								RATES, SALARIES AND BENEFITS
5	10									PSYCHOLOGY (INDIVIDUAL AND GROUP BEHAVIOR)
5	10	1								EDUCATIONAL PSYCHOLOGY
5	10	2								EXPERIMENTAL PSYCHOLOGY
5	10	3								CLINICAL PSYCHOLOGY
5	10	4								DEVELOPMENTAL PSYCHOLOGY
5	10	5								MILITARY PSYCHOLOGY
5	10	6								PARAPSYCHOLOGY
5	10	7								PHYSIOLOGICAL PSYCHOLOGY
5	10	8								SOCIAL PSYCHOLOGY
5	11									SOCIOLOGY
5	11	1								ANTHROPOLOGY
5	11	2								CRIMINOLOGY
5	11	3								ETHNOLOGY

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RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPERIMENTAL DEVELOPMENT	DESIGN DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
6										BIOLOGICAL AND MEDICAL SCIENCE
6	1									BIOCHEMISTRY
6	1	1								BIOCHEMICAL ANALYSIS
6	1	2								IDENTIFICATION, CHARACTERIZATION AND MEASUREMENT BIOCHEMICAL
6	1	3								PHOTO AND CHEMOSYNTHESIS
6	1	4								REACTIONS AND PROPERTIES OF CHEMICAL SUBSTANCES
6	1	5								STUDIES OF CHEMICAL PROCESSES - BIOLOGICAL SYSTEMS
6	1	6								SUBSTANCES (BIOCHEMICAL)
6	2									BIOENGINEERING
6	2	1								BIODYNAMICS
6	2	2								BIOINSTRUMENTATION AND EQUIPMENT
6	2	2	1							BIOINSTRUMENTATION (MAN MACHINE SYSTEMS)
6	2	2	2							DATA MONITORING
6	2	2	3							DATA SELECTION
6	2	2	4							TELEMETRY
6	2	3								BIO MEDICAL DATA PROCESSING
6	2	3	1							BIO MEDICAL INFORMATION HANDLING
6	2	3	2							MATHEMATICAL MODELS
6	2	3	3							PARAMETER ESTIMATION
6	2	3	4							STATISTICAL METHODS
6	2	3	5							STORAGE AND RETRIEVAL
6	3									BIOLOGY
6	3	1								ANIMAL ANATOMY
6	3	2								ANIMAL BREEDING
6	3	3								BIOLOGICAL CONTROL SYSTEMS
6	3	4								GENERAL STUDIES (BOTANY, ENTOMOLOGY, ZOOLOGY)
6	4									BIONICS
6	5									CLINICAL MEDICINE
6	5	1								DENTISTRY
6	5	2								GENERAL MEDICINE
6	5	3								INTERNAL MEDICINE
6	5	4								PATHOLOGY
6	5	5								PHYSICAL THERAPY
6	6									ENVIRONMENTAL BIOLOGY

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RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
6	7	1								ECOLGY
6	6	2								EXTERNAL INFLUENCES
6	6	3								LITERATURE
6	6	4								PEST CONTROLS
6	6	5								PESTICIDES
6	7									ESCAPE, RESCUE AND SURVIVAL
6	7	1								CATAPULTS, PERSONNEL EJECTION
6	7	2								DECONTAMINATION
6	7	3								ESCAPE SYSTEMS
6	7	4								FLIGHT CLOTHING
6	7	5	1							METHODS AND EQUIPMENT (ESCAPE)
6	7	5	2							PARACHUTES
6	7	5								ROTORCHUTES
6	7	6								OXYGEN EQUIPMENT
6	7	7								RESCUE EQUIPMENT
6	7	8								SURVIVAL DOCTRINE AND METHODS
6	7	9								SURVIVAL EQUIPMENT
6	7	10								SURVIVAL GEAR
6	8									FOOD
6	8	1								FOOD CHEMISTRY
6	8	1	1							ENZYMES
6	8	1	2							FLAVOR AND ODOR IDENTIFICATION
6	8	1	3							FLAVOR AND ODOR SYNTHESIS
6	8	1	4							NUTRITION
6	8	2								FOOD ENGINEERING
6	8	3								FOOD MICROBIOLOGY
6	8	4								FOOD PACKAGING
6	8	4	1							ASEPTIC
6	8	4	2							FLEXIBLE FOOD PACKAGING
6	8	4	3							FOOD PROCESSED IN PACKAGE
6	8	4	4							RIGID PACKAGING (FOOD)
6	8	4	5							VACUUM FOOD PACKAGING
6	8	4	6							ZERO GRAVITY PACKAGES (SPACE)
6	8	5								FOOD PROCESSING
6	8	5	1							DEHYDRATION
6	8	5	2							FABRICATION
6	8	5	3							FORMULATION AND COMPOSITION
6	8	5	4							HEAT
6	8	5	5							IRRADIATION

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RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	DEVELOPMENTAL	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
7	1	5	5							OTHER PRESERVATION AND PROCESSING METHODS		
6	2	5	7							PRODUCTION AND MANUFACTURE (FOOD PRODUCTS)		
6	3	5	8							SYNTHESIS (FOOD PRESERVATION)		
6	5	5	4							UNIT PROCESSES (FOOD)		
6	2	6								FOOD PSYCHOLOGY		
6	2	6	1							ACCEPTANCE		
6	2	6	2							NON-STRESS FACTORS		
6	2	6	3							STRESS FACTORS		
6	2	6	4							TEST METHODOLOGY		
6	2	7								FOOD TECHNOLOGY		
6	5	8								KITCHEN EQUIPMENT		
6	2	8	1							FIELD PREPARATION SYSTEMS		
6	2	8	2							FIXED PREPARATION SYSTEMS		
6	2	9								NUTRITIONAL DESIGN		
6	2	10								PRODUCT DESIGN (FOOD PRODUCTS)		
6	2	11								RATION DESIGN		
6	9									HYGIENE AND SANITATION		
6	9	1								AIR AND WATER POLLUTION		
6	9	2								PREPARED AND PACKAGED PRODUCTS		
6	9	3								SYNTHETIC COMPOUNDS		
6	10									INDUSTRIAL (OCCUPATIONAL) MEDICINE		
6	10	1								MAN VS EQUIPMENT		
6	10	2								NOISE (INDUSTRIAL MEDICINE)		
6	10	3								PHYSICAL TRAUMA (WOUND BALLISTICS)		
6	10	4								SAFETY AND PREVENTIVE MEDICINE		
6	10	5								TOXIC EXPOSURE		
6	11									LIFE SUPPORT		
6	11	1								CABIN CONDITIONING		
6	11	2								CLOSED ECOLOGICAL SYSTEMS		
6	11	3								ECOLOGICAL FACTORS		
6	11	4								RADIATION PROTECTION		
6	11	5								RESPIRATORY SUPPORT		
6	11	6								SPACE SUITS		
6	11	7								SUSTAINMENT IN FOREIGN ENVIRONMENTS		

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RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	DEVELOPMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
6	11	8								TEMPERATURE (WEATHER)		
6	12									MEDICAL AND HOSPITAL EQUIPMENT AND SUPPLIES		
6	12	1								ATMOSPHERE CONDITIONING		
6	12	2								LABORATORY SUPPORT		
6	12	3								THERMAL CONTROL		
6	13									MICROBIOLOGY		
6	13	1								CHEMICAL - BIOLOGICAL - RADIOLOGICAL WARFARE		
6	13	2								STUDIES OF BACTERIA		
6	14									PERSONNEL SELECTION AND MAINTENANCE (MEDICAL)		
6	14	1								INFECTIOUS DISEASES		
6	14	2								INDUSTRIAL MEDICINE		
6	14	3								MENTAL HEALTH		
6	14	4								PHYSICAL EXAMINATIONS		
6	14	5								PHYSICAL FITNESS		
6	14	6								PHYSICAL STANDARDS		
6	14	7								QUARANTINE PROCEDURES		
6	15									PHARMACOLOGY		
6	15	1								DRUGS (COMPOSITION)		
6	15	2								PLANETARY SURFACE SAMPLING		
6	15	3								PSYCHOPHARMACOLOGY (EFFECT OF)		
6	16									PHYSIOLOGY		
6	16	1								GROWTH		
6	16	2								SENSORY PHYSIOLOGY		
6	16	3								STERILIZATION		
6	17									PROTECTIVE EQUIPMENT		
6	17	1								CNR SHIELDING AND PROTECTION		
6	17	2								CLOTHING DESIGN		
6	17	3								CLOTHING CONSTRUCTION		
6	17	4								COMBAT PROTECTIVE CLOTHING		
6	17	4	1							ANTI-PERSONEL MINE PROTECTIVE CLOTHING		
6	17	4	2							BIOLOGICAL WARFARE PROTECTIVE CLOTHING		
6	17	4	3							BODY ARMOR		

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	DEVELOPMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
6	17	4	4							CHEMICAL WARFARE PROTECTIVE CLOTHING
6	17	4	5							NUCLEAR WARFARE PROTECTIVE CLOTHING
6	17	4	6							SPACE CLOTHING
6	17	4	7							SUBMARINERS CLOTHING
6	17	5								ENVIRONMENTAL PROTECTIVE CLOTHING
6	17	6								OCCUPATIONAL PROTECTIVE CLOTHING
6	17	7								PERSONAL EQUIPMENT
6	17	8								TENTS AND SHELTERS
6	17	8	1							AIR-SUPPORTED SHELTERS
6	17	8	2							FRAME TYPES
6	17	8	3							HARDWARE AND BINDINGS FOR TENTS
6	17	8	4							POLE SUPPORTED
6	17	8	5							SPECIAL TYPE SHELTERS
6	18									RADIOBIOLOGY
6	18	1								ELECTROMAGNETIC RADIATION DETECTION
6	18	2								HEALTH PHYSICS
6	18	3								PROPHYLAXIS AND THERAPY
6	18	4								RADIATION EFFECTS (BIOLOGICAL)
6	18	5								RADIATION INJURIES
6	18	6								RADIATION PROTECTIVE COMPOUNDS
6	19									STRESS PHYSIOLOGY
6	19	1								AEROSPACE MEDICINE
6	19	2								ALTITUDE SICKNESS
6	19	3								COLD INJURIES
6	19	4								ENVIRONMENTAL EFFECTS
6	19	5								HEAT CASUALTIES
6	19	6								MOTION, SOUND, LIGHT AND HEAT STRESSES
6	19	7								STRESS NUTRITION (SEE ALSO FOOD 04080000)
6	20									TOXICOLOGY
6	20	1								INDUSTRIAL
6	20	2								PHYSIOLOGICAL EFFECTS
6	20	3								POISONS AND CONTAMINANTS
6	20	3	1							HW AND CW DECONTAMINATION
6	20	3	2							POISON DETECTION
6	20	3	3							NEUTRALIZATION

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	1 RESEARCH EXPLORATORY DEVELOPMENT	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE
6	21									WEAPONS EFFECTS
6	21	1								WOUNDS (RELATED INJURIES)
6	21	1	1							BOMB TYPE WOUNDS
6	21	1	2							SMALL ARMS TYPE WOUNDS
6	22									BIOPHYSICS
6	22	1								ABSORPTION AND TRANSFER OF ENERGY IN THE CELL
6	22	2								FLASH BLINDNESS
6	22	3								MATHEMATICAL MODELS OF BIOPHYSICAL SYSTEMS
6	22	4								OTHER MODELS
6	22	5								RADIATION EFFECTS ON CELL

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPERIMENTAL DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
1	2	3	4	5	6	7	8	9	10	SCOPE
7										CHEMISTRY
7	1									CHEMICAL ENGINEERING
7	1	1								TECHNOLOGY (CHEMICAL ENGINEERING)
7	1	2								MATERIALS HANDLING
7	1	3								MATERIALS SEPARATION
7	1	4								PILOT PLANT DESIGN AND OPERATION
7	2									INORGANIC CHEMISTRY
7	2	1								ANALYSIS, PREPARATION AND REACTION
7	2	1	1							HALOGENS
7	2	1	2							HEAVY METALS
7	2	1	3							LIGHT METALS
7	2	1	4							NOBLE GASES
7	2	1	5							OTHER NON-METALS
7	2	1	6							RARE EARTH ELEMENTS
7	2	2								BORON INORGANIC COMPOUNDS
7	2	3								INERT GAS COMPOUNDS
7	2	4								SUPERCONDUCTING COMPOUNDS
7	2	5								CRYSTAL PURIFICATION TECHNIQUES
7	3									ORGANIC CHEMISTRY
7	3	1								POLYMER CHEMISTRY
7	3	2								SURFACE CHEMISTRY
7	4									PHYSICAL CHEMISTRY
7	4	1								AEROSOLS
7	4	2								ATMOSPHERIC OZONE
7	4	3								COMBUSTION
7	4	4								ELECTROCHEMISTRY
7	4	5								MASS SPECTROSCOPY
7	4	6								METAL-ORGANIC COMPOUNDS
7	4	7								MOLECULAR SPECTROSCOPY
7	4	8								PHOTOCHEMISTRY
7	4	9								RADIATION
7	4	10								SILICONES
7	4	11								THERMODYNAMICS

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE
7	5									RADIO AND RADIATION CHEMISTRY
7	5									ANALYTICAL CHEMISTRY

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
8										EARTH SCIENCES AND OCEANOGRAPHY
8	1									BIOLOGICAL OCEANOGRAPHY
8	2									CARTOGRAPHY
8	3									DYNAMIC OCEANOGRAPHY
8	3	1								MARINE TECHNOLOGY
8	3	2								OCEANOGRAPHIC BUOYS
8	3	3								OCEANOGRAPHIC INSTRUMENTS
8	4									GEOCHEMISTRY
8	5									GEODESY
8	6									GEOGRAPHY
8	6	1								BIOGEOGRAPHY
8	6	2								CULTURAL GEOGRAPHY
8	6	3								ECONOMIC GEOGRAPHY
8	6	4								GEOMORPHOLOGY
8	6	5								MEDICAL GEOGRAPHY
8	6	6								MILITARY GEOGRAPHY
8	6	7								POLITICAL GEOGRAPHY
8	6	8								REGIONAL CLIMATOLOGY
8	6	9								REGIONAL GEOGRAPHY
8	7									GEOLOGY AND MINERALOGY
8	7	1								CRYSTALLOGRAPHY (GEOLOGY AND MINERALOGY)
8	7	2								GEOLOGY
8	7	3								GEOMORPHOLOGY
8	7	4								HISTORICAL GEOLOGY
8	7	5								MINERALOGY
8	7	6								PALEONTOLOGY
8	7	7								PETROLOGY
8	7	8	1							ROCK MECHANICS
8	7	8	2							DYNAMIC PROPERTIES
8	7	8	3							STATIC PROPERTIES
8	7	8	3							MASS PROPERTIES

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT				
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
8	7	9								STRATIGRAPHY		
8	7	10								STRUCTURAL GEOLOGY		
8	7	11								VULCANOLOGY		
8	8									HYDROLOGY AND LIMNOLOGY		
8	9									MINING ENGINEERING		
8	10									PHYSICAL OCEANOGRAPHY		
8	11									SEISMOLOGY		
8	12									SNOW, ICE AND PERMAFROST		
8	12	1								GLACIOLOGY		
8	13									SOIL MECHANICS		
8	13	1								CONSOLIDATION		
8	13	2								DYNAMIC PROPERTIES		
8	13	3								STATIC PROPERTIES		
8	13	4								STABILIZATION		
8	14									TERRESTRIAL MAGNETISM		
8	14	1								GEOMAGNETIC AND INTERPLANETARY MAGNETIC INTERACTIONS		
8	14	2								GEOMAGNETIC FIELD VARIATION		
8	14	3								MAIN GEOMAGNETIC FIELD		

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FILED	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	DESIGN AND DEVELOPMENT	MANAGEMENT AND SUPPORT	
										SCOPE
9										ELECTRONICS AND ELECTRICAL ENGINEERING
9	1									COMPONENTS
9	1	1								AIRCRAFT GENERATORS
9	1	1	1							AMPLIFIERS
9	1	1	2							BUSS BARS
9	1	1	3							GENERATORS
9	1	1	4							INVERTERS
9	1	1	5							VOLTAGE REGULATORS
9	1	2								CABLE
9	1	3								CAPACITORS
9	1	4								CONDENSERS
9	1	5								CONNECTORS
9	1	6								CRYSTALS
9	1	7								DATA PROCESSING
9	1	8								DETECTORS
9	1	8	1							MICROWAVE
9	1	8	2							INFRARED
9	1	8	3							VISIBLE
9	1	9								DIODES
9	1	10								ELECTRO MECHANICAL COMPONENTS
9	1	11								ELECTRIC SWITCHES
9	1	12								ELECTRON TUBES
9	1	13								ELECTRONIC CIRCUIT ELEMENTS
9	1	13	1							COILS
9	1	13	2							CONVENTIONAL
9	1	13	3							DISCRETE
9	1	13	4							INTEGRATED CIRCUITS
9	1	13	5							MICRO WAVE
9	1	13	6							MICROELECTRONICS, THIN FILM
9	1	13	7							MONOLITHIC
9	1	13	8							RELAYS
9	1	13	9							RESISTORS
9	1	13	10							SEMI-CONDUCTORS
9	1	13	11							THIN FILM
9	1	13	12							TRANSISTORS
9	1	14								ELECTRONIC DISPLAY
9	1	15								FLUIDIC CIRCUIT ELEMENTS
9	1	16								INTEGRATED CIRCUIT ELEMENTS
9	1	17								MAGNETIC CIRCUIT ELEMENTS
9	1	18								MAGNETIC CORES

RESEARCH & DEVELOPMENT CAPABILITY INDEX											
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST											
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT	
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DESIGN	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE	
9	1	19								METERS	
9	1	20								MICRO-ELECTRONICS	
9	1	21								MICROWAVE CIRCUIT ELEMENTS	
9	1	22								PERFORMANCE STANDARDS	
9	1	23								POTTED CIRCUITS	
9	1	24								POWER EQUIPMENT PARTS	
9	1	25								PRINTED CIRCUITS	
9	1	26								QUALIFICATION TESTING	
9	1	27								RECORD/AMPLIFY COMPONENTS	
9	1	28								RELAYS	
9	1	29								RESISTORS	
9	1	30								SEMICONDUCTOR DEVICES	
9	1	31								SPEAKERS	
9	1	32								SWITCHES	
9	1	33								THERMISTORS	
9	1	34								THIN FILMS	
9	1	35								TRANSFORMERS	
9	1	36								TRANSISTORS	
9	1	37								VARISTORS	
9	1	38								WIRE	
9	2									COMPUTERS	
9	2	1								ANALOG COMPUTERS	
9	2	2								ANALOG-DIGITAL COMPUTERS	
9	2	3								BIONIC COMPUTERS	
9	2	4								COMPIERS	
9	2	5								COMPUTER ACCESSORIES	
9	2	6								COMPUTER APPLICATIONS	
9	2	7								COMPUTER DESIGN AND DEVELOPMENT	
9	2	8								COMPUTER INSTALLATION	
9	2	9								COMPUTER PROGRAMMING	
9	2	9	1							BUSINESS TYPE	

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
9	2	9	2							EXECUTIVE SYSTEMS		
9	2	9	3							ORBIT AND ALTITUDE DETERMINATION		
9	2	9	4							REALTIME		
9	2	9	5							SCIENTIFIC DATA ANALYSIS		
9	2	9	6							SCIENTIFIC DATA REDUCTION		
9	2	9	7							SCIENTIFIC PROGRAMMING		
9	2	9	8							SOFTWARE SYSTEMS		
9	2	9	9							SYSTEMS		
9	2	10								COMPUTER SUPPLIES		
9	2	11								DATA PROCESSING		
9	2	12								DATA STORAGE AND RETRIEVAL		
9	2	13								DIGITAL COMPUTERS		
9	2	14								EXECUTIVE ROUTINES		
9	2	15								FLUIDIC COMPUTERS		
9	2	16								GRAPHIC DISPLAYS		
9	2	17								HYBRID COMPUTERS		
9	2	18								PROGRAMS AND PROGRAMMING		
9	2	18	1							PROGRAM GENERATORS		
9	2	18	2							PROGRAMMING LANGUAGES		
9	2	18	2							REAL TIME PROGRAMS		
9	2	19								SOFTWARE SYSTEMS		
9	2	20								SYSTEM DOCUMENTATION		
9	2	21								SYSTEM EVALUATION		
9	2	22								THIN FILM TECHNIQUES		
9	2	23								TIME SHARING		
9	2	24								TIME SHARING—MULTI PROCESSING		
9	3									ELECTRONIC AND ELECTRICAL ENGINEERING		
9	3	1								ELECTRICAL DISTRIBUTION SYSTEMS		
9	3	1	1							INTERFERENCE SUPPRESSION		
9	3	1	2							INTERFERENCE VULNERABILITY REDUCTION		
9	3	2								ELECTRO MAGNETS RADIATION		
9	3	3	1							ELECTRO MAGNETS		
9	3	4								ELECTRICAL AND ELECTRONIC INSTALLATION		
9	3	5								ELECTRICAL MACHINERY		
9	3	6								ELECTROMAGNETIC COMPATIBILITY		
9	3	7								ELECTRONIC SYSTEMS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE		
9	3	7	1							ACCELERATION AND IMPACT RECORDING (ELECTRONIC SYSTEMS)		
9	3	7	2							ACCELERATION AND IMPACT SENSING (ELECTRONIC SYSTEMS)		
9	3	7	3							OSCILLOGRAPHIC SYSTEMS		
9	3	7	4							TIMING DEVICES		
9	3	8								OPERATION OF ELECTRICAL MACHINERY		
9	3	9								STATIC CONVERTERS, INVERTERS AND TRANSFORMERS		
9	3	10								TEST EQUIPMENT		
9	4									INFORMATION THEORY		
9	4	1								CODING THEORY		
9	4	2								COMMUNICATION TECHNIQUES AND COMPONENTS		
9	4	3								COMMUNICATIONS THEORY		
9	4	3	1							DATA COMPRESSION		
9	4	3	2							ERROR DETECTION AND CORRECTION		
9	4	4								DATA DISPLAY		
9	4	5								DATA UTILIZATION/COMPACTION		
9	4	6								DECISION THEORY		
9	4	7								GAME THEORY		
9	4	8								INFORMATION CONTENT		
9	4	9								INFORMATION ENTROPY		
9	4	10								INPUT/OUTPUT TECHNIQUES		
9	4	11								NOISE (INFORMATION THEORY)		
9	4	12								REPRESENTATION		
9	4	13								SIGNAL PROCESSING THEORY		
9	4	14								STATISTICAL ANALYSIS		
9	4	15								UNCERTAINTY		
9	5									SUBSYSTEMS		
9	5	1								AMPLIFIERS		
9	5	2	1							ELECTRICAL SUBSYSTEMS		
9	5	2	2							HEATING EQUIPMENT		
9	5	2	3							IGNITION SYSTEMS		
9	5	2	4							LIGHTS		
9	5	2	5							MOTORS		
9	5	2	6							SWITCHES FOR CIRCUIT BREAKERS		
9	5	2	7							WIRING, CABLES		
9	5	3								ANTENNAS		
9	5	3	1							ANTENNAE COUPLERS		
9	5	3	2							ANTENNAE DRIVE SYSTEMS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX											
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST											
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT	
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	TECHNOLOGICAL DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE	
1	2	3	4	5	6	7	8	9			
9	5	3	3							BROADBAND MICROWAVE	
9	5	3	4							BROADBAND VHF-UHF ANTENNAES	
9	5	3	5							DIRECTIONAL AND OMNI - DIRECTIONAL VHF	
9	5	3	6							DUPLEXERS	
9	5	3	7							ELECTRO-MAGNETIC WINDOWS	
9	5	3	8							FEED SYSTEMS	
9	5	3	9							HF VHF	
9	5	3	10							HIGH DEFINITION	
9	5	3	11							HIGH SPEED	
9	5	3	12							LF MF	
9	5	3	13							MASTS	
9	5	3	14							MICROWAVE	
9	5	3	15							PEDESTALS	
9	5	3	16							RADCMFS	
9	5	3	17							REFLECTOR-STRUCTURES	
9	5	3	18							TOWERS	
9	5	3	19							TRANSMISSION LINES (RF)	
9	5	3	20							UHF SHF	
9	5	4								COMMAND AND CONTROL EQUIPMENT	
9	5	5								DATA DISPLAY	
9	5	6								DATA HANDLING EQUIPMENT	
9	5	7								DESIGN AND DEVELOPMENT OF COMPONENT AGGREGATES	
9	5	8								ELECTRICAL NETWORKS	
9	5	9								ELECTRONIC CIRCUITS	
9	5	10								ENCODERS	
9	5	11								FLUIDIC CIRCUITS	
9	5	12								MICROWAVE	
9	5	13								MODELS	
9	5	14								PARAMETRIC AMPLIFIERS	
9	5	15								POWER SUPPLIES	
9	5	16								RADIATION	
9	5	17								RECEIVERS	
9	5	18								RF RECEIVERS	
9	5	19								RF TRANSMITTERS	
9	5	20								RF TRANSPONDERS	
9	5	21								R-F CIRCUITS	
9	5	22								SERVO MECHANISMS	
9	5	23								SYNCHRONIS	

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE		
9	5	24								SENSORS		
9	5	25								TRANSDUCERS		
9	5	26								TRANSCEIVERS		
9	5	27								TRANSMITTERS		
9	5	28								TRANSPONDERS		
9	5	29								TAPE RECORDERS (AIRBORNE AND SPACEBORNE)		
9	5									TELEMETRY		
9	5	1								ANTENNAS (TELEMETRY)		
9	6	2								COMMUNICATIONS		
9	6	3								COMPONENTS		
9	6	4								FM/FM		
9	6	5								PACM		
9	6	6								PAM		
9	6	7								PCM		
9	6	8								PFM		
9	6	9								RADIO		
9	6	10								READOUT AND DISPLAY		
9	6	11								TELEMETRY DECOMMUTATION EQUIPMENT		
9	6	12								TELEMETRY RECEIVERS		
9	6	13								TELEMETRY TRANSMITTERS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
10										ENERGY CONVERSION (NON-PROPULSIVE)
10	1									CONVERSION TECHNIQUES
10	1	1								ELECTRICAL POWER CONVERSION DEVICES
10	1	2								ENGINES AND MOTORS
10	1	3								MAGNETOHYDRODYNAMIC DEVICES
10	1	4								PHOTOELECTRIC DEVICES
10	1	5								PHOTOVOLTAIC DEVICES
10	1	6								THERMAL CONVERSION
10	1	7								THERMAL PHOTOVOLTAIC DEVICES
10	1	8								THERMIONIC DEVICES
10	1	9								THERMIONIC GENERATORS
10	1	10								THERMOELECTRIC DEVICES
10	1	11								THERMOELECTRIC GENERATORS
10	1	12								TURBINES
10	1	13								TURBOMACHINERY
10	2									POWER SOURCES
10	2	1								AUXILIARY POWER PLANTS
10	2	2								CONVERTERS
10	2	3								FUEL CELLS
10	2	4								GENERATORS
10	2	5								INVERTERS
10	2	6								MAGNETOHYDRODYNAMIC DEVICES
10	2	7								NUCLEAR POWER SOURCES
10	2	7	1							NUCLEAR FUSION
10	2	7	2							NUCLEAR REACTOR WITH THERMOELECTRIC CONVERTER
10	2	8								PULSE POWER
10	2	9								RADIOISOTOPE THERMOELECTRIC GENERATOR
10	2	10								SOLAR CONCENTRATOR WITH THERMIONIC GENERATOR
10	2	11								SOLAR CELL DEVICES
10	2	12								THERMIONIC DEVICES
10	2	13								THERMOELECTRIC DEVICES

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SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT			
SCOPE												
10	3										ENERGY STORAGE	
10	3	1									BATTERIES	
10	3	1	1								AIRCRAFT BATTERIES	
10	3	1	2								PRIMARY BATTERIES	
10	3	1	3								SECONDARY BATTERIES	
10	3	1	4								SILVER CADMIUM BATTERIES	
10	3	1	5								SILVER ZINC BATTERIES	
10	3	2									CAPACITORS (ENERGY STORAGE)	
10	3	3									COMPRESSED SPRINGS	
10	3	4									POWER CONDITIONING	
10	3	5									WIND TUNNEL ACCELERATORS	

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	SCOPE		
11										MATERIALS		
11	1									ADHESIVES AND SEALS		
11	1	1								ADHESIVE BINDERS		
11	1	2								GASKETS		
11	1	3								GLUE		
11	1	4								SEALANTS		
11	2									CERAMICS, REFRACTORIES, AND GLASSES		
11	2	1								BRICK		
11	2	2								CEMENTS AND CONCRETE		
11	2	3								CERAMICS		
11	2	4								CERMETS		
11	2	5								GLASSES		
11	2	6								NONMETALLIC REFRACTORY MATERIALS		
11	2	7								PORCELAIN		
11	2	8								REFRACTORIES		
11	2	9								TILES		
11	3									COATINGS, COLORANTS, AND FINISHES		
11	3	1								ANTIDETECTION		
11	3	2								ANTITOXICANTS		
11	3	3								CAMOUFLAGE		
11	3	4								DYES		
11	3	5								EDIBLE COATINGS		
11	3	6								HIGH CONSPICUITY		
11	3	7								INFRARED COATINGS		
11	3	8								MARKING		
11	3	9								METALLIC		
11	3	10								ORGANIC		
11	3	11								PAINTS		
11	3	12								PIGMENTS		
11	3	13								PLASTIC COATINGS		

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RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 OPERATIONAL DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
11	2	14								PAINT PRIMERS
11	2	15								PROTECTIVE ELECTROCHEMICALS
11	2	16								RUBBER COATINGS
11	3	17								VARNISHES
11	4									COMPOSITE MATERIALS
11	4	1								FOAMS (COMPOSITE MATERIALS)
11	4	2								FOIL PLASTIC FILM
11	4	3								OTHER LAMINATES
11	4	4								PLASTIC FILM-PAPER
11	4	5								RADAR ABSORBER MATERIALS
11	4	6								WOOD-METAL COMPOSITES
11	4	7								WOOD-PAPER COMPOSITES
11	5									FIBERS AND TEXTILES
11	5	1								NATURAL FIBERS, THREADS, YARNS
11	5	2								NATURAL TEXTILES
11	5	3								SYNTHETIC FIBERS, THREADS, YARNS
11	5	4								SYNTHETIC TEXTILES
11	6									METALLURGY AND METALLOGRAPHY
11	6	1								CORROSION STUDIES
11	6	2								EXTRACTIVE AND PHYSICAL METALLURGY
11	6	3								HEAT RESISTANT METALS AND ALLOYS
11	6	4								MICROSTRUCTURE
11	6	5								PHYSICAL AND MECHANICAL PROPERTIES
11	6	6								REFINING AND PRODUCTION
11	7									MISCELLANEOUS MATERIALS
11	7	1								ANIMAL PRODUCTS
11	7	2								ENERGY DISSIPATING MATERIALS
11	7	3								MAGNETIC MATERIALS
11	7	4								NON-MAGNETIC MATERIALS
11	7	5								REFRIGERANTS
11	7	6								SOIL STABILIZERS

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	DESIGN DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE		
11	8									OILS, LUBRICANTS, AND HYDRAULIC FLUIDS		
11	9									PLASTICS		
11	9	1								ABRATIVE PLASTICS COMPOSITES		
11	9	2								PLASTIC FORMS		
11	9	2	1							BARRIER MATERIALS		
11	9	3								PLASTIC QUALITIES		
11	9	3	1							FOAMS (PLASTIC)		
11	9	3	2							PRODUCTION PROPERTIES AND PERFORMANCE (PLASTICS)		
11	9	3	3							PLASTICIZERS (PLASTICS)		
11	9	3	4							RESINS		
11	9	4								REINFORCED PLASTICS AND LAMINATES		
11	10									RUBBERS		
11	10	1								ELASTOMERS		
11	10	2								NATURAL RUBBERS		
11	10	3								PRODUCTION METHODS (RUBBERS)		
11	10	4								PROPERTIES AND PERFORMANCE (RUBBERS)		
11	10	5								RUBBER PRODUCTS		
11	10	6								SYNTHETIC ELASTOMERS		
11	11									SOLVENTS, CLEANERS, AND ABRASIVES		
11	12									WOOD AND PAPER PRODUCTS		
11	12	1								CONVERTED PRODUCTS		
11	12	2								CUSHIONING		
11	12	3								ENERGY DISSIPATING MATERIALS AND STRUCTURES (WOOD AND PAPER)		
11	12	4								MULTIWALL SYSTEMS		
11	12	5								TUBES (WOOD AND PAPER)		

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
12										MATHEMATICAL SCIENCES
12	1									MATHEMATICS AND STATISTICS
12	1	1								EXPERIMENTATION AND CORRELATION
12	1	1	1							TEST OF SIGNIFICANCE AND CONFIDENCE INTERVALS
12	1	1	2							DESIGN AND ANALYSIS OF EXPERIMENTS
12	1	1	3							CORRELATION
12	1	1	4							CURVE FITTING
12	1	1	5							SHORTCUT METHODS OF ANALYSIS
12	1	2								MAINTAINABILITY
12	1	3								MANAGERIAL APPLICATIONS
12	1	4								MATHEMATICAL STATISTICS AND PROBABILITY THEORY
12	1	4	1							ESTIMATION AND INFERENCE
12	1	4	2							DISTRIBUTION FUNCTIONS
12	1	4	3							PROBABILITY THEORY
12	1	4	4							TRANSFORMATIONS
12	1	5								MEASUREMENT AND CONTROL
12	1	6								METHODOLOGY
12	1	7								NUMERICAL ANALYSIS
12	1	8								RELIABILITY
12	1	9								STATISTICS
12	1	9	1							STATISTICAL PROCESS CONTROL
12	1	9	2							SAMPLE PROCEDURES AND PLANS
12	1	9	3							MANAGEMENT OF QUALITY CONTROL
12	2									OPERATIONS RESEARCH

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	TECHNICAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
13										MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING		
13	1									AIR CONDITIONING, HEATING, LIGHTING, AND VENTILATING		
13	1	1								AIR CONDITIONING		
13	1	2								HEATING		
13	1	3								LIGHTING		
13	1	4								VENTILATION		
13	1	5								REFRIGERATION		
13	2									CIVIL ENGINEERING		
13	2	1								AIR POLLUTION CONTROL		
13	2	2								HYDRAULICS		
13	2	3								WATER SUPPLY AND DISTRIBUTION		
13	3									CONSTRUCTION EQUIPMENT, MATERIALS AND SUPPLIES		
13	4									CONTAINERS AND PACKAGING		
13	4	1								PACKAGING DESIGN		
13	4	2								PERFORMANCE (PACKAGING)		
13	4	3								PACKAGING PRODUCTS		
13	4	4								TESTING		
13	4	4	1							COMPRESSION TESTING (PACKAGING)		
13	4	4	2							DROP TESTING (PACKAGING)		
13	4	4	3							DRUM TESTING (PACKAGING)		
13	4	4	4							INCLINE IMPACT		
13	4	4	5							RAIN AND IMMERSION		
13	4	4	6							VIBRATION		
13	5									COUPLINGS, FASTENERS AND JOINTS		
13	6									GROUND TRANSPORTATION EQUIPMENT		
13	6	1								AMPHIBIOUS VEHICLES		
13	6	2								RAILROAD EQUIPMENT		
13	6	2	1							LOCOMOTIVES		
13	6	2	2							OTHER ROLLING STOCK		
13	6	2	3							SELF-PROPELLED AUXILIARY CARS		
13	6	3								SMALL LOAD CARRIERS (GROUND TRANSPORTATION EQUIPMENT)		
13	6	3	1							LOAD PLATFORMS		
13	6	3	2							MOTOR CYCLES AND SCOOTERS		
13	6	3	3							SPECIAL TERRAIN VEHICLES		
13	6	4								SPECIAL APPLICATION VEHICLES		
13	6	4	1							AIRCRAFT TRAILERS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPERIMENTAL DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
13	6	4	2							BOMB TRAILERS		
13	6	4	3							CRASH VEHICLES		
13	6	4	4							DOLLIES		
13	6	4	5							FORK LIFT AND MATERIAL HANDLING		
13	6	4	6							FUEL TANKERS		
13	6	4	7							WRECKERS		
13	6	5								SUSPENSION SYSTEMS (SPECIAL VEHICLES)		
13	6	5	1							SPRING AND DAMPING MEDIA		
13	6	5	2							TIRES		
13	6	5	3							WHEELED VEHICLE SYSTEMS		
13	6	5	4							WHEELS		
13	6	6								TOWED VEHICLES		
13	6	6	1							BULK MATERIAL HAULERS		
13	6	6	2							SEMITRAILERS		
13	6	6	3							TRAILERS		
13	6	6	4							VAN BODIES		
13	6	7								TRACKED TRANSPORT VEHICLES		
13	6	7	1							GENERAL CARGO		
13	6	7	2							MISSILE AND AMMUNITION TRANSPORT		
13	6	8								TRANSPORT WHEELED VEHICLES		
13	6	8	1							PASSENGER CARS		
13	6	8	2							TRUCK-TRACTORS		
13	6	8	3							TRUCKS OTHER BODY TYPE		
13	6	8	4							TRUCKS CARGO		
13	6	9								UNCONVENTIONAL VEHICLES		
13	6	9	1							LEVERED MACHINES		
13	6	9	2							MARGINAL TERRAIN VEHICLES		
13	6	9	3							SINGLE PURPOSE VEHICLES		
13	6	9	4							SLEDS		
13	6	9	5							SNOW VEHICLES		
13	6	9	6							UNIQUE CONCEPTS (VEHICLES)		
13	6	10								VEHICLE AUXILIARY EQUIPMENT		
13	6	10	1							CLIMATIC KITS		
13	6	10	2							FLotation AIDS		
13	6	10	3							TRACTION AIDS		
13	6	10	4							VEHICLE HEATERS		
13	6	11								VEHICLE COMPONENTS		
13	6	11	1							ENGINE COOLING SYSTEMS		
13	6	11	2							STEERING, CONTROL AND BRAKES		
13	6	11	3							VEHICLE STRUCTURE		
13	6	12								VEHICULAR POWER CONVERSION SYSTEMS		
13	6	12	1							DRIVE AXLES		
13	6	12	2							DRIVE LINE COMPONENTS		
13	6	12	3							ELECTRICAL DRIVERS		
13	6	12	4							FINAL DRIVES		
13	6	12	5							HYDROKINETIC TRANSMISSIONS		
13	6	12	6							HYDROMECHANICAL TRANSMISSIONS		
13	6	12	7							HYDROSTATIC TRANSMISSIONS		
13	6	12	8							TRANSMISSION MECHANICALS		
13	6	13								WEAPONS HANDLING EQUIPMENT		
13	7									HYDRAULIC AND PNEUMATIC EQUIPMENT		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	CONCEPT DEVELOPMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
13	7	1								ACCUMULATORS (HYDRAULIC AND PNEUMATIC)		
13	7	2								ACTUATORS (HYDRAULIC AND PNEUMATIC)		
13	7	3								CHECKOUT EQUIPMENT		
13	7	4								COMPRESSORS		
13	7	5								CONTROL VALVES		
13	7	6								DISTRIBUTION EQUIPMENT (HYDRAULIC AND PNEUMATIC)		
13	7	7								FILTERS		
13	7	8								MARINE PUMPS AND MOTORS		
13	8									INDUSTRIAL PROCESSES		
13	8	1								ARC DRESSING		
13	8	2								BRAZING		
13	8	3								CASTING		
13	8	4								CHEMICAL OR ELECTROCHEMICAL MILLING		
13	8	5								COLD FORMING		
13	8	6								CONVEYORS		
13	8	7								DESIGN AUTOMATION		
13	8	8								ELECTROFORMING (ELECTRODEPOSITION)		
13	8	9								ENGINEERING DOCUMENTATION		
13	8	10								ENGINEERING LIAISON		
13	8	11								EXTRUSION AND DRAWING		
13	8	12								FABRICATION METALLURGY, TECHNIQUES		
13	8	13								FORGING, HOT WORKING		
13	8	14								GRINDING AND POLISHING		
13	8	15								HIGH ENERGY RATE FORMING		
13	8	16								MACHINING		
13	8	17								MECHANICAL, STRUCTURAL DRAFTING		
13	8	18								POWDER METALLURGY		
13	8	19								QUALITY ASSURANCE		
13	8	20								ROLLING		
13	8	21								SPINNING		

RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	RESEARCH EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE	
13	8	22							STAMPING AND COINING	
13	8	23							WELDING	
13	9								MACHINERY AND TOOLS	
13	9	1							MACHINE ELEMENTS	
13	9	2							MACHINE TOOLS - METAL WORKING	
13	9	3							MACHINE TOOLS - WOOD-WORKING	
13	9	4							PERISHABLE TOOLS	
13	9	5							SEMI-PERMANENT AUXILIARY TOOLS	
13	10								MARINE ENGINEERING	
13	10	1							SUBMARINE ENGINEERING	
13	11								PUMPS, FILTERS, PIPES, TUBING AND VALVES	
13	12								SAFETY ENGINEERING	
13	13								STRUCTURAL ENGINEERING	

RESEARCH & DEVELOPMENT CAPABILITY INDEX											
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST											
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT	
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT		
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE	
14										METHODS AND EQUIPMENT	
14	1									COST EFFECTIVENESS	
14	1	1								HUMAN RELIABILITY	
14	1	2								OPERATIONS RESEARCH	
14	1	3								OPTIMIZATION METHODS	
14	1	4								PERSONNEL COST/EFFECTIVENESS	
14	1	5								STANDARDIZATION	
14	1	6								VALUE ENGINEERING	
14	1	7								SYSTEM EFFECTIVENESS	
14	2									LABORATORIES, TEST FACILITIES AND TEST EQUIPMENT	
14	2	1	1							TEST FACILITY DESIGN, CHECKOUT	
14	2	1	2							SHOCK TUNNELS	
14	2	1	3							HYPERBALLISTIC RANGES	
14	2	1	3							WIND TUNNELS	
14	2	2								LABORATORY AND FACILITY OPERATION	
14	2	2	1							TESTING TECHNIQUES	
14	2	3								LABORATORIES	
14	2	3	1							CHEMICAL LABORATORY	
14	2	3	2							MECHANICAL DESIGN	
14	2	3	3							METALLURGICAL DESIGN	
14	2	3	4							PHYSICAL TESTING	
14	2	3	5							ENVIRONMENTAL TESTING LABORATORIES	
14	2	4								OPERATION OF TEST FACILITIES	
14	2	5								STAFFING-LABORATORIES	
14	2	6								TEST EQUIPMENT DESIGN, DEVELOPMENT	
14	2	6	1							WIND TUNNEL INSTRUMENTATION	
14	2	6	2							WIND TUNNEL COMPONENTS	
14	2	7								TEST EQUIPMENT (LABORATORY)	
14	2	7	1							FORCE MEASUREMENT	
14	2	7	2							PRESSURE MEASUREMENT	
14	2	7	3							RADIATION MEASUREMENT	
14	2	7	4							STRAIN MEASUREMENT	
14	2	7	5							SUPPLEMENTARY ELECTRONIC EQUIPMENT	
14	2	7	6							TEMPERATURE MEASUREMENT	
14	2	7	7							TIME MEASUREMENT	
14	2	7	8							VELOCITY MEASUREMENT	
14	2	7	9							VIBRATION MEASUREMENT	
14	2	8								TEST FACILITIES	
14	2	8	1							AERONAUTICAL	
14	2	8	2							DATA EVALUATION AND REDUCTION	
14	2	8	3							ENVIRONMENTAL TEST FACILITY	

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPERIMENTAL DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
14	2	8	4							GROUND COMBAT VEHICLE AND TRANSPORTATION EQUIPMENT		
14	2	8	5							MISSILE TEST FACILITIES		
14	2	8	6							NON-DESTRUCTIVE TESTING		
14	2	8	7							PROVING GROUNDS		
14	2	8	8							SPACE AND ALTITUDE SIMULATOR		
14	2	8	9							WEAPONRY		
14	3									RECORDING DEVICES		
14	3	1								DIELECTRIC RECORDING SYSTEMS		
14	3	2								DISC		
14	3	3								ELECTROSTATIC RECORDERS		
14	3	4								RECORDING FILM		
14	3	5								MAGNETIC RECORDERS		
14	3	6								TRANSDUCER DESIGN		
14	3	7								ELECTRONIC EQUIPMENT COMPATABILITY		
14	3	7	1							CONFIGURATION CONTROL		
14	3	7	2							INTERFERENCE ANALYSIS		
14	3	7	3							INTERFERENCE TESTING		
14	3	7	4							INTERFERENCE REDUCTION		
14	4									RELIABILITY		
14	4	1								COMPONENT RELIABILITY PARTS CONTROL		
14	4	2								CORRECTIVE ACTION SYSTEMS		
14	4	3								DATA ANALYSIS		
14	4	4								DATA COLLECTION		
14	4	5								FAILURE DATA		
14	4	6								MAINTAINABILITY		
14	4	7								QUALITY CONTROL		
14	4	8								RELIABILITY ANALYSIS		
14	4	9								RELIABILITY TEST AND FAILURE ANALYSIS		
14	4	10								SYSTEM RELIABILITY DESIGN CONTROL		
14	5									REPROGRAPHY		
14	5	1								REPRODUCTION TECHNIQUES		
14	5	1	1							AUTORADIOGRAPHY		
14	5	1	2							BLUEPRINT		
14	5	1	3							DIAZO		
14	5	1	4							ELECTROSTATIC COPIERS		
14	5	1	5							HECTOGRAPH		
14	5	1	6							LITHOGRAPHY		
14	5	1	7							PHOTOSTATICS		
14	5	1	8							PRINTING		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
14	5	2								PHOTOGRAPHY CAMERAS AND PROJECTORS PHOTOGRAPHIC PROCESSES, TECHNIQUES AND EQUIPMENT PHOTOGRAPHIC EQUIPMENT		
14	5	2	1									
14	5	2	2									
14	5	2	3									

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	TECHNICAL DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE		
15										MILITARY SCIENCES		
15	1									ANTISUBMARINE WARFARE		
15	1	1								COUNTERMEASURES		
15	1	1	1							AMPLIFIERS, CONVERTERS AND DETECTORS		
15	1	2								MINE COUNTERMEASURES		
15	1	3								NAVAL ARCHITECTURE - SUBMARINES		
15	1	4								NAVAL ARCHITECTURE - SURFACE SHIPS		
15	1	5								NAVIGATION (ANTISUBMARINE WARFARE)		
15	1	6								OCEANOGRAPHY		
15	1	6	1							ARCTIC OCEANOGRAPHY		
15	1	6	2							TROPIC OCEANOGRAPHY		
15	1	7								RADAR AND RADIO FOR ANTISUBMARINE WARFARE		
15	1	7	1							TRACKING EQUIPMENT		
15	1	7	2							RADAR DISPLAY		
15	1	7	3							RADAR TECHNIQUES (ANTISUBMARINE WARFARE)		
15	1	8								TORPEDO COUNTERMEASURES		
15	1	9								VULNERABILITY STUDIES (ANTISUBMARINE WARFARE)		
15	2									CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL WARFARE		
15	2	1								BW-CW AGENTS		
15	2	1	1							BIOLOGICAL AGENTS		
15	2	2								CBR ORDNANCE		
15	2	3								CHEMICAL WARFARE EQUIPMENT AND MATERIALS		
15	2	3	1							FLAMETHROWERS		
15	2	3	2							INCENDIARIES		
15	2	3	3							PROTECTION AND DECONTAMINATION		
15	2	3	4							PYROTECHNICS (CHEMICAL WARFARE)		
15	2	3	5							TOXIC CHEMICAL AGENTS		
15	2	3	6							ANTIMATERIAL AGENTS		
15	2	4								COUNTERMEASURES		
15	2	5								OPERATIONS AND SYSTEM REQUIREMENTS		
15	2	6								RADIOLOGICAL DEFENSE		
15	2	6	1							ATOMIC RADIATION EFFECTS ON MATERIALS AND COMPONENTS		
15	2	7								RADIOLOGICAL WEAPONS		
15	3									DEFENSE		
15	3	1								ANTIAIRCRAFT DEFENSE SYSTEMS		
15	3	1								ANTIAIRCRAFT DEFENSE SYSTEM		
15	3	1	1							ACTIVE AND PASSIVE DEFENSE SYSTEMS		
15	3	1	2							ANTIAIRCRAFT INSTRUMENTATION		
15	3	1	3							HUMAN PILOT CONTROL AND TRACKING CAPABILITIES		
15	3	1	4							MAPPING SYSTEMS, AIRBORNE		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT		SCOPE		
15	3	1	5							RADAR AND RADIO FOR ANTIAIRCRAFT SYSTEMS		
15	3	1	6							SURVEILLANCE SYSTEMS, AIRBORNE		
15	3	2								ANTI-MISSILE DEFENSE SYSTEMS		
15	3	2	1							METEOROLOGY (ANTI-MISSILE)		
15	3	2	2							NUCLEAR BURSTS		
15	3	2	3							NUCLEAR PROPULSION (ANTIMISSILE)		
15	3	2	4							NUCLEAR RADAR		
15	3	3								ANTISATELLITE DEFENSE SYSTEMS		
15	3	3	1							SPACECRAFT AND SPACE EQUIPMENT		
15	3	3	2							SPACECRAFT DESIGN AND FLIGHT		
15	3	3	3							SPACECRAFT STRUCTURES (ANTISATELLITE SYSTEM)		
15	4									INTELLIGENCE		
15	4	1								AUTOMATED INTELLIGENCE SENSORS		
15	4	1	1							ACOUSTIC SENSORS		
15	4	1	2							CHEMICAL INTELLIGENCE		
15	4	1	3							ELECTRO-OPTICAL IMAGING SENSORS		
15	4	1	4							IR IMAGING SENSORS		
15	4	1	5							PHOTOGRAPHIC SENSORS		
15	4	1	6							SEISMIC SENSORS		
15	4	1	7							SENSOR SUBSYSTEM CONTROL AND DATA RECORDING		
15	4	2								DATA HANDLING AND DISPLAY		
15	4	2	1							CONVERSION, PHOTOGRAPHIC, ELECTRONIC, ELECTRO-OPTICAL		
15	4	2	2							DISSEMINATION AND REPRODUCTION ELECTRONIC AND GRAPHICAL		
15	4	2	3							PRESENTATION-AUTOMATED DATA		
15	4	2	4							STORAGE AND RETRIEVAL-AUTOMATED DATA		
15	4	3								IMAGE DATA RECORDING MEDIA		
15	4	3	1							E-O AND UV TARGET ACQUISITION + TRACKING		
15	4	3	2							IR RADIATION DETECTORS		
15	4	3	3							PHOTOGRAPHIC PRINTING AND REPRODUCTION		
15	4	3	4							UV RADIATION DETECTORS		
15	4	3	5							VIDEO RECORDING DISPLAY READOUT		
15	4	3	6							VISIBLE RADIATION DETECTORS		
15	4	4								OPERATIONS (INTELLIGENCE)		
15	4	4	1							INTELLIGENCE PARAMETER STUDIES		
15	4	4	2							INTELLIGENCE SYSTEMS STUDIES		
15	4	5								PSYCHOLOGICAL WARFARE (INTELLIGENCE)		
15	4	6								RECONNAISSANCE AND SURVEILLANCE TECHNOLOGY		
15	4	6	1							ATMOSPHERIC EFFECTS ON PHOTOGRAPHY		
15	4	6	2							ILLUMINATION TECHNIQUES FOR NIGHT PHOTOGRAPHY		
15	4	6	3							IMAGE EVALUATION AND INTERPRETATION		
15	4	6	4							PHOTOGRAPHIC PROCESSING TECHNIQUES		
15	5									LOGISTICS		
15	5	1								AIRCRAFT SYSTEMS		
15	5	1	1							SUPPLY TRANSPORT		
15	5	1	2							SUPPLY STORAGE		
15	5	1	3							TURN AROUND TIME		
15	5	2								AIRPORT SYSTEMS (LOGISTICS)		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
15	5	3								CONSUMPTION DATA		
15	5	4								ENVIRONMENTAL EXPOSURE PROFILE		
15	5	5								GROUND TRANSPORTATION EQUIPMENT (LOGISTICS)		
15	5	5	1							AUTOMOTIVE PARTS AND ACCESSORIES		
15	5	5	2							RAILROAD EQUIPMENT LOGISTICS		
15	5	5	3							SPECIAL PURPOSE VEHICLES		
15	5	5	4							TRUCKS		
15	5	6								ORGANIZATIONAL REQUIREMENTS COMPUTATION		
15	5	7								PERSONAL EQUIPMENT DESIGN, TEST		
15	5	8								REQUISITION AND ISSUE PATTERN		
15	5	9								SPECIFICATIONS		
15	5	10								STANDARDIZATION		
15	5	11								SUPPLY REQUIREMENTS		
15	5	12								TRANSPORTATION MANAGEMENT		
15	5	12	1							AIR TRANSPORTATION LOGISTICS		
15	5	12	2							HIGHWAY TRANSPORTATION LOGISTICS		
15	5	12	3							RAIL TRANSPORTATION LOGISTICS		
15	5	12	4							WATER TRANSPORTATION LOGISTICS		
15	6									NUCLEAR WARFARE		
15	6	1								DESIGN OF NUCLEAR DEVICES		
15	6	1	1							ADVANCED POWER PLANT DEVICES		
15	6	1	2							GROUND NUCLEAR POWER PLANTS		
15	6	1	3							WARHEADS AND FUZES (NUCLEAR)		
15	6	1	4							WEAPON DEVELOPMENT AND USE		
15	6	2								NUCLEAR EXPLOSION DAMAGE		
15	6	2	1							AIR INDUCED EFFECTS		
15	6	2	2							AIR BLAST EFFECTS		
15	6	2	3							COSMIC RADIATION		
15	6	2	4							CRATERING, DEBRIS + ROCKETS		
15	6	2	5							DIRECT INDUCED EFFECTS		
15	6	2	6							ELECTROMAGNETIC RADIATION FROM NUCLEAR EXPLOSION		
15	6	2	7							NUCLEAR REACTIONS (WEAPONS EFFECTS)		
15	7									OPERATIONS, STRATEGY, AND TACTICS		
15	7	1								AIRBORNE OPERATIONS		
15	7	2								AIRDROP OPERATIONS		
15	7	3								COMMUNICATION OPERATIONS		
15	7	3	1							COMBAT INFORMATION CENTERS		
15	7	3	2							OPTICAL COMMUNICATIONS		
15	7	3	3							RADIO COMMUNICATION		
15	7	3	4							SOUND RECORDING AND AMPLIFICATIONS		
15	7	3	5							TELEVISION		
15	7	3	6							WIRE COMMUNICATIONS		
15	7	4								DETECTION TECHNIQUES		

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				1	2	3	4	5	6	
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	SYSTEMS DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE
15	7	4	1							INFRARED DETECTORS
15	7	4	2							OPTICAL DETECTION
15	7	4	3							RADAR AND RADIO TARGET DETECTION
15	7	4	4							RADAR TECHNIQUES (DETECTION)
15	7	5								GROUND TRANSPORTATION EQUIPMENT
15	7	6								GUIDED MISSILE OPERATIONS
15	7	7								MEDICAL SUPPLIES AND EQUIPMENT
15	7	8								MILITARY SCIENCES AND OPERATIONS
15	7	8	1							ATTACK
15	7	8	3							LOGISTICS (OPERATION)
15	7	8	4							MILITARY OPERATIONS ANALYSIS
15	7	8	5							OPERATIONS (MILITARY SCIENCES)
15	7	8	6							ORGANIZATION AND ADMINISTRATION
15	7	8	7							PSYCHOLOGICAL OPERATIONS
15	7	8	8							STRATEGY AND TACTICS
15	7	9								NAVAL ARCHITECTURE-SUBMARINES (STRATEGY AND TACTICS)
15	7	10								ORDNANCE EQUIPMENT AND SUPPLIES
15	7	11								QUARTERMASTER EQUIPMENT AND SUPPLIES
15	7	12								RECONNAISSANCE AND SURVEILLANCE SYSTEMS
15	7	13								TRANSPORTATION (OPERATIONS, STRATEGY, AND TACTICS)
15	7	13	1							HIGHWAY TRANSPORTATION OPERATIONS
15	7	13	2							RAIL TRANSPORTATION OPERATIONS
15	7	13	3							WATER TRANSPORTATION
15	7	14								WEAPON SYSTEMS REQUIREMENTS
15	7	14	1							SPACE WEAPONRY
15	7	15								ANTI-AIR WARFARE
15	7	16								ANTI-SURFACE WARFARE

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	RESEARCH DEVELOPMENT	EXPERIMENTAL DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MAINTENANCE AND SUPPORT	
16										MISSILE TECHNOLOGY
16	1									MISSILE LAUNCHING AND GROUND SUPPORT
16	1	1								AEROBALLISTICS
16	1	2								ELECTRONIC GROUND SUPPORT EQUIPMENT
16	1	3								LAUNCH FACILITY DESIGN
16	1	4								LAUNCHING FROM AIRCRAFT
16	1	5								MECHANICAL GROUND SUPPORT EQUIPMENT
16	1	5	1							EGG CRATE
16	1	5	2							TUBE
16	1	5	3							ZERO LENGTH RAIL
16	1	6								STATIC FIRING TEST
16	1	7								TEST AND CHECKOUT
16	1	7								RANGE SAFETY
16	2									MISSILE TRAJECTORIES
16	2	1								AERODYNAMIC HEATING
16	2	2								AIRLOADS
16	2	3								EXPERIMENTAL AERODYNAMICS
16	2	3	1							AEROPHYSICS
16	2	3	2							FLOW FIELDS
16	2	3	3							OBSERVABLE WAKES
16	2	4								FLIGHT MECHANICS
16	2	4	1							BOUNDARY LAYERS
16	2	4	2							DRAW AND LIFT
16	2	4	3							FLIGHT PATHS
16	2	4	4							PERFORMANCE
16	2	4	5							STABILITY AND CONTROL
16	2	4	6							THEORETICAL AERODYNAMICS
16	2	5								FLIGHT TEST ANALYSIS
16	2	6								IMPACT PREDICTION
16	2	7								STABILITY AND CONTROL
16	2	8								WARHEAD BALLISTICS
16	2	9								WARHEAD KILL MECHANICS
16	3									MISSILE WARHEADS AND FUZES
16	3	1								CONVENTIONAL WARHEADS
16	3	1	1							EXPLOSIVE
16	3	1	2							FUZES
16	3	1	3							TARGET VULNERABILITY
16	3	1	4							WARHEADS
16	4	2								GUIDANCE FUZING COMBINATION

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE		
16	3	3								NUCLEAR WARHEADS		
16	3	3	1							AIR TARGETS		
16	3	3	2							SUB-SURFACE TARGETS		
16	3	3	3							SURFACE TARGET		
16	4									MISSILES		
16	4	1								AIR AND SPACE LAUNCHED MISSILES		
16	4	2								GENERAL MISSILE THEORY		
16	4	2	1							AVIONICS SYSTEM DESIGN AND ANALYSIS		
16	4	2	2							CONFIGURATION DESIGN		
16	4	2	3							CONTROL SYSTEM DESIGN		
16	4	2	4							ELECTRO-MECHANICAL DESIGN, AND INSTALLATION		
16	4	2	5							FATIGUE		
16	4	2	6							MAINTENANCE		
16	4	2	7							MISSILE COMPONENTS		
16	4	2	8							MISSILE CONSTRUCTION		
16	4	2	9							MISSILE DAMAGE ASSESSMENT		
16	4	2	10							MISSILE DESIGN		
16	4	2	11							MISSILE PERFORMANCE		
16	4	2	12							MISSILE VULNERABILITY STUDIES		
16	4	2	13							PROPULSION SYSTEM, DESIGN, AND INSTALLATION		
16	4	2	14							STRUCTURAL ANALYSIS		
16	4	2	15							STRUCTURAL DESIGN		
16	4	2	16							STRUCTURAL TEST		
16	4	2	17							SYSTEM DESIGN AND ANALYSIS		
16	4	2	18							SYSTEM SAFETY		
16	4	2	19							VIBRATION AND DYNAMIC RESPONSE		
16	4	2	20							VULNERABILITY STUDIES		
16	4	2	21							WEIGHT CONTROL		
16	4	3								RANGE OPERATION		
16	4	3	1							FREQUENCY INTERFERENCE CONTROL		
16	4	3	2							LAUNCHING OPERATION		
16	4	3	3							LOGISTICS		
16	4	3	4							MANAGEMENT		
16	4	3	5							OPERATIONAL PROCEDURES		
16	4	3	6							RANGE SAFETY		
16	4	3	7							VEHICLE FLIGHT PLANNING		
16	4	4								SURFACE-LAUNCHED MISSILES		
16	4	5								SURFACE LAUNCHED ROCKETS AND MISSILES		
16	4	5	1							AERODYNAMICS		
16	4	5	2							BALLISTIC RE-ENTRY VEHICLES		
16	4	5	3							CHAFF DISPENSERS		
16	4	5	4							COMPONENTS		
16	4	5	5							DECOY DEPLOYMENT SYSTEMS		
16	4	5	6							FLIGHT TEST		
16	4	5	7							HEAT SHIELDS		
16	4	5	8							PENETRATION AIDS		
16	4	5	9							RADAR CROSS SECTION		
16	4	5	10							SHOCK ISOLATORS		
16	4	5	11							STAGE SEPARATION		
16	4	5	12							STRUCTURE		
16	4	5	13							SUB SYSTEMS		
16	4	5	14							SYSTEMS INTEGRATION		

RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
16	4	5	15							TEST AND EVALUATION
16	4	5	16							TEST EQUIPMENT
16	4	5	17							VULNERABILITY STUDIES
16	4	5	18							WIND TUNNEL TEST
16	4	6								UNDERWATER-LAUNCHED MISSILES

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
FIELD	GROUP	SECTION	UNIT	1 RESEARCH	2 EXPLORATORY DEVELOPMENT	3 ADVANCED DEVELOPMENT	4 ENGINEERING DEVELOPMENT	5 DEVELOPMENT	6 MANAGEMENT AND SUPPORT	
17										NAVIGATION, COMMUNICATIONS, DETECTION, AND COUNTERMEASURES
17	1									ACOUSTIC DETECTION
17	1	1								SINAR
17	1	2								SOUND BUOYS
17	1	3								SOUND LOCATION EQUIPMENT
17	1	4								SOUND RANGING EQUIPMENT
17	1	5								TERMINAL GUIDANCE
17	1	6								UNDERWATER ACOUSTICS
17	2									COMMUNICATIONS
17	2	1								COMMAND AND CONTROL
17	2	2								COMMUNICATION APPLICATIONS
17	2	2	1							AEROSPACE RELAY
17	2	2	2							MILLIMETER FREQUENCY
17	2	2	3							MF-HF
17	2	2	4							MULTIPLE ACCESS (MULTI-SUBSCRIBER)
17	2	2	5							SATELLITE RELAY
17	2	2	6							SHF
17	2	2	7							SUB-MILLIMETER FREQUENCY
17	2	2	8							VHF-UHF
17	2	2	9							VLF-LF
17	2	3								COMMUNICATION TECHNIQUES
17	2	3	1							ANALYSIS AND SYNTHESIS
17	2	3	2							ANTI JAM
17	2	3	3							HIGH SPEED DIGITAL
17	2	3	4							INFORMATION COMPRESSION
17	2	3	5							MODULATION + DEMODULATION
17	2	3	6							WIDEBAND
17	2	4								DATA DISPLAY
17	2	5								DATA TRANSMISSION
17	2	5	1							DIGITAL
17	2	5	2							ANALOGUE
17	2	6								ELECTRONIC AND ELECTROMAGNETIC COMMUNICATION SYSTEMS
17	2	6	1							INFRARED COMMUNICATIONS
17	2	6	2							LIGHT/LASER COMMUNICATIONS
17	2	6	3							OPTICAL COMMUNICATIONS
17	2	6	4							ULTRA VIOLET COMMUNICATIONS
17	2	7								RADIO COMMUNICATION SYSTEMS
17	2	7	1							EQUIPMENT EFFECTIVENESS
17	2	7	2							PERSONNEL COMMUNICATIONS
17	2	7	3							RECEIVERS
17	2	7	4							RELAY REPEATERS
17	2	7	5							TELETYPES
17	2	7	6							TRANSCEIVERS

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT		SCOPE		
17	2	7	7							TRANSMITTERS		
17	2	8								RADIO TRACKING		
17	2	9								SATELLITE COMMUNICATIONS		
17	2	9	1							ACTIVE		
17	2	9	2							PASSIVE		
17	2	9	3							SATELLITE COMMUNICATIONS REPEATERS		
17	2	10								TELEVISION		
17	2	10	1							SLOW SKAN TV AND FACSIMILE		
17	2	10	2							DIGITAL VIDEO		
17	2	10	3							IMAGE INTENSIFIER		
17	2	11								WIRE COMMUNICATIONS		
17	2	11	1							TELEGRAPH SYSTEMS		
17	2	11	2							TELEPHONE SYSTEMS		
17	2	11	3							TELETYPE SYSTEMS		
17	3									DIRECTION FINDING		
17	3	1								DIRECTION FINDERS COMMUNICATIONS EQUIPMENT		
17	3	2								SIGNAL DETECTION		
17	3	3								SIGNAL LOCATION		
17	4									ELECTROMAGNETIC AND ACOUSTIC COUNTERMEASURES		
17	4	1								ANTIJAMMING OF SIGNALS		
17	4	2								DECEPTION		
17	4	3								DECEPTION JAMMING		
17	4	3	1							BROADBAND MICROWAVE TRANSMITTING TUBES CARCINOTRONS		
17	4	3	2							BROADBAND UHF - VHF TRANSMITTING TUBES		
17	4	3	3							JAMMERS		
17	4	3	4							NOISE GENERATORS		
17	4	3	5							NOISE JAMMING		
17	4	3	6							OPERATIONAL ANALYSIS		
17	4	3	7							RADAR HOMING		
17	4	3	8							RF RECONNAISSANCE RECEIVERS		
17	4	3	9							SIGNAL ANALYSIS		
17	4	3	10							SIGNAL DISPLAY		
17	4	3	11							SIGNAL PROCESSING		
17	4	3	12							SIGNAL RECORDING		
17	4	4								ECM DECOYS (MICROWAVE)		
17	4	4	1							AEROSOLS		
17	4	4	2							BALLOONS		
17	4	4	3							CAMOUFLAGE - ABSORBING - MATERIALS, REFLECTING MATERIALS		
17	4	4	4							CHAFF		
17	4	4	5							CORNER REFLECTORS		
17	4	4	6							INFRARED DECEPTION DEVICES		
17	4	4	7							INTERROGATOR - RESPONDER BEACONS		
17	4	4	8							ROCKETS		
17	4	5								ELECTRONIC WARFARE SYSTEMS STUDIES		
17	4	6								ECM RECEIVERS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX													
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST													
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT			
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT				
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE			
17	4	7								INTERCEPTION OF SIGNALS			
17	4	8								TRANSMITTERS (ELECTROMAGNETIC AND ACOUSTIC COUNTERMEASURES)			
17	5									INFRARED AND ULTRAVIOLET DETECTION			
17	5	1								DETECTION OF RADIATION			
17	5	2								INFRARED WARNING RECEIVERS			
17	5	3								MEASUREMENT OF RADIATION			
17	5	4								PHOTODETECTOR APPLICATION			
17	5	5								TRACKING RADIATION SOURCE			
17	6									MAGNETIC DETECTION			
17	6	1								DETECTION OF MAGNETIC FIELD			
17	6	2								MEASUREMENT OF MAGNETIC FIELD			
17	7									NAVIGATION AND GUIDANCE			
17	7	1								ACTIVE SYSTEMS			
17	7	2								AIR TRAFFIC CONTROL SYSTEMS			
17	7	3								CELESTIAL GUIDANCE			
17	7	4								CELESTIAL SYSTEMS			
17	7	5								CONTROL APPROACH SYSTEMS			
17	7	6								DOPPLER RADAR			
17	7	7								DOPPLER RADAR NAVIGATION			
17	7	8	1							ELECTRONIC NAVIGATION, GUIDANCE			
17	7	8	2							EXTERNAL LC LORAN			
17	7	8	3							OMEGA			
17	7	8	4							SATELLITE			
17	7	8	4							SELF CONTAINED LC DOPPLER			
17	7	9								ELECTRONIC SYSTEMS (NAVIGATION AND GUIDANCE)			
17	7	10								ENERGY MANAGEMENT			
17	7	11								HEIGHT FINDING AND TERRAIN AVOIDANCE			
17	7	12								HOMING DEVICES			
17	7	13								HOMING TECHNIQUES			
17	7	14								INERTIAL GUIDANCE			
17	7	14	1							CONVENTIONAL			
17	7	14	2							UNCONVENTIONAL			
17	7	15								INERTIAL SYSTEMS			

RESEARCH & DEVELOPMENT CAPABILITY INDEX											
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST											
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT	
				1	2	3	4	5	6		
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE	
17	7	16								INSTRUMENT LANDING SYSTEMS	
17	7	17								LORAN	
17	7	18								NAVIGATION SYSTEM + DESIGN	
17	7	18	1							CONTROL SYSTEM	
17	7	18	2							CONTROL DYNAMICS	
17	7	18	3							ELECTRO MECHANICAL SYSTEM	
17	7	18	4							SIMULATION SYSTEM	
17	7	19								NAVIGATIONAL AIDS	
17	7	19	1							AIR POSITION INDICATORS	
17	7	19	2							ASTROGRAPHS	
17	7	19	3							CHARTS	
17	7	19	4							CHRONOMETERS	
17	7	19	5							COMPASSES	
17	7	19	6							DRIFTMETERS	
17	7	19	7							GRAPHIC INSTRUMENTS	
17	7	20								PASSIVE SYSTEMS	
17	7	21								REENTRY GUIDANCE	
17	7	22								SATELLITE NAVIGATION	
17	7	23								SEMI-ACTIVE SYSTEMS	
17	7	24								SHORAN	
17	8									OPTICAL DETECTION	
17	8	1								BINOCULARS	
17	8	2								FLASH SPOTTING OR LOCATING EQUIPMENT	
17	8	3								PERISCOPES	
17	8	4								SIGHTS AND SIGHTING EQUIPMENT	
17	8	5								TELESCOPES	
17	8	6								THEODOLITES	
17	9									RADAR DETECTION	
17	9	1								CONTINUOUS WAVE	
17	9	2								RADIOFREQUENCY SIGNAL STUDIES	
17	9	3								SEARCH RADARS	
17	9	4								TRACKING RADARS	
17	10									SEISMIC DETECTION	
17	10	1								SEISMIC DETECTION SYSTEMS	
17	10	2								SEISMIC WAVE STUDIES	

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE		
18										NUCLEAR SCIENCE AND TECHNOLOGY		
18	1									FUSION DEVICES (THERMONUCLEAR)		
18	1	1								FUSION DEVICE DESIGN AND CONSTRUCTION		
18	1	1	1							RADIOACTIVE FUSION DEVICES		
18	1	2								OPERATION OF FUSION DEVICES		
18	1	3								THEORIES (FUSION DEVICES)		
18	2									ISOTOPES		
18	2	1								INDUSTRIAL ISOTOPIIC APPLICATIONS		
18	2	2								ISOTOPE CONCENTRATION		
18	2	3								MEDICAL ISOTOPIIC APPLICATIONS		
18	2	4								NON-SNAP APPLICATIONS (ISOTOPES)		
18	2	5								SEPARATION OF ISOTOPES		
18	2	6								STABLE ISOTOPES		
18	3									NUCLEAR EXPLOSIONS		
18	3	1								NUCLEAR EXPLOSION DEVICES		
18	3	1	1							NUCLEAR EXPLOSION SIMULATION		
18	3	1	2							NUCLEAR EXPLOSION TECHNIQUES		
18	3	2								NUCLEAR BLAST EFFECTS		
18	3	2	1							BLAST EFFECTS ON ELECTRONICS		
18	3	2	2							BLAST EFFECTS ON PERSONNEL		
18	3	2	3							BLAST EFFECTS ON STRUCTURES		
18	3	3								RADIATION SPECTROMETERS		
18	3	4								TESTS (NUCLEAR)		
18	3	4	1							NUCLEAR TEST EFFECTS		
18	3	4	2							THERMAL EFFECTS (NUCLEAR)		
18	4									NUCLEAR INSTRUMENTATION		
18	4	1								NUCLEAR INSTRUMENTATION DETECTION DEVICES		
18	4	1	1							PORTABLE NUCLEAR INSTRUMENTATION		
18	4	1	2							RADIATION COUNTERS		
18	4	1	3							RADIATION DETECTORS		
18	5									NUCLEAR POWER PLANTS		
18	5	1								AIRBORNE NUCLEAR POWER PLANTS		
18	5	2								GROUND NUCLEAR POWER PLANTS		
18	5	3								INTEGRATED ASSEMBLAGE REACTOR TURBOGENERATOR		
18	5	4								MARINE NUCLEAR POWER PLANTS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	SYSTEM DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
18	5	5								NUCLEAR POWER FOR SPACE		
18	5	6								NUCLEAR POWER PLANT CONTROL AND REGULATION		
18	5	7								PROPULSION (NUCLEAR POWER)		
18	5	8								STATIONARY NUCLEAR POWER PLANTS		
18	6									RADIATION SHIELDING AND PROTECTION		
18	6	1								DECONTAMINATION (RADIATION)		
18	6	2								ISOTOPE PLOTS		
18	6	3								NUCLEAR MATERIALS TRANSMISSION		
18	6	4								RADIATION ABSORPTION STUDIES		
18	6	5								RADIATION SHIELDING DESIGN		
18	6	6								SAFETY DEVICES		
18	7									RADIOACTIVE WASTES AND FISSION PRODUCTS		
18	7	1								NUCLEAR CROSS SECTIONS		
18	7	2								NUCLEAR SCATTERING		
18	7	3								SEPARATION PROCESSING, HANDLING, STORAGE, AND DISPOSAL		
18	7	4								THERMAL REACTIONS (NUCLEAR)		
18	8									RADIOACTIVITY		
18	8	1								BINDING ENERGY (NUCLEAR)		
18	8	2								CRITICAL RADIATION		
18	8	3								FALLOUT		
18	8	4								INDUCED RADIOACTIVITY		
18	8	5								INTERACTION OF RADIOACTIVE MATERIALS		
18	8	6								NATURAL RADIOACTIVITY		
18	8	7								NUCLEAR ACCELERATORS		
18	8	8								RADIOACTIVITY DECAY		
18	8	9								RADIOLOGY		
18	9									REACTOR ENGINEERING AND OPERATION		
18	9	1								INTEGRATED EFFECTS (REACTORS)		
18	9	2								OPERATION OF REACTORS (NON-POWER)		
18	9	3								REACTOR DESIGN		
18	9	4								REACTOR ENGINEERING		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
18	9	5								THERMAL EFFECTS (REACTORS)		
18	10									REACTOR MATERIALS		
18	10	1								GAMMA RAYS		
18	10	2								NUCLEAR MODERATORS		
18	10	3								NEUTRONS		
18	10	4								NUCLEAR FISSION FRAGMENTS		
18	10	5								PRODUCTION (REACTOR MATERIALS)		
18	10	6								REACTOR MATERIAL CONTROL		
18	10	7								REACTOR MATERIAL COOLANTS		
18	10	8								REACTOR MATERIAL RECLAMATION		
18	10	9								SHIELDING		
18	10	10								SHIELDING MATERIALS		
18	10	11								STRUCTURAL REACTOR MATERIALS		
18	10	12								TESTS (REACTOR MATERIALS)		
18	10	13								X-RAYS		
18	11									REACTOR PHYSICS		
18	11	1								FISSION PRODUCTS		
18	11	2								NUCLEAR KINETICS		
18	11	3								SCATTERING (NUCLEAR)		
18	11	4								SIMULATION REACTORS		
18	11	5								THEORIES (REACTORS)		
18	11	6								THERMALIZATION		
18	12									REACTORS (POWER)		
18	12	1								OPERATION OF POWER REACTORS		
18	12	2								POWER REACTOR CONSTRUCTION		
18	12	3								POWER REACTOR DESIGN		
18	13									REACTORS (NON-POWER)		
18	13	1								NON-POWER REACTOR TESTS		
18	13	2								REACTOR PROCESSES		
18	13	3								REACTOR PRODUCTION RESEARCH		

RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
18	13	4								TRAINING (NON-POWER REACTORS)
18	14									SNAP TECHNOLOGY
18	14	1								ISOTOPIC SNAP TECHNOLOGY
18	14	1	1							SNAP CONSTRUCTION (ISOTOPIC)
18	14	1	2							SNAP DESIGN
18	14	1	3							SNAP OPERATION
18	14	1	4							SNAP SAFETY MEASURES
18	14	2								REACTOR SNAP TECHNOLOGY
18	14	2	1							REACTOR DESIGN (SNAP)
18	14	2	2							REACTOR OPERATION (SNAP)
18	14	2	3							REACTOR SAFETY MEASURES (SNAP)
18	14	2	4							SNAP CONSTRUCTION (REACTOR)

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	PROTOTYPE DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
19										ORDNANCE		
19	1									AMMUNITION, EXPLOSIVES, AND PYROTECHNICS		
19	1	1								AIR-SURFACE PYROTECHNICS		
19	1	2								AMMUNITION TYPES		
19	1	2	1							AIRCRAFT AMMUNITION		
19	1	2	2							ANTIAIRCRAFT ORDNANCE		
19	1	2	3							ANTIARMOR		
19	1	2	4							ANTIPERSONNEL AMMUNITION		
19	1	2	5							ANTISHIP AMMUNITION		
19	1	2	6							ANTISUBMARINE AMMUNITION		
19	1	2	7							ANTITANK AMMUNITION		
19	1	2	8							ARMOR PIERCING		
19	1	2	9							FIN-STABILIZED		
19	1	2	10							FRAGMENTATION AMMUNITION		
19	1	2	11							GRENADES		
19	1	2	12							HIGH EXPLOSIVE AMMUNITION		
19	1	2	13							INCENDIARY AMMUNITION		
19	1	2	14							MORTAR AMMUNITION		
19	1	2	15							SMALL ARMS AMMUNITION		
19	1	2	16							SPIN-STABILIZED AMMUNITION		
19	1	2	17							SPOTTING ROUNDS		
19	1	2	18							TRACERS (ORDNANCE)		
19	1	2	19							TRAINING AMMUNITION		
19	1	3								AMMUNITION COMPONENTS		
19	1	3	1							AIMING DEVICES		
19	1	3	2							AMMUNITION BOOSTERS		
19	1	3	3							AMMUNITION FIRING MECHANISMS		
19	1	3	4							AMMUNITION IGNITERS		
19	1	3	5							AMMUNITION PRIMERS		
19	1	3	6							CARTRIDGE CASES		
19	1	3	7							CAVITY LINERS		
19	1	3	8							DELAY MECHANISMS		
19	1	3	9							PROJECTILE CAPS		
19	1	3	10							PROJECTILE CASES		
19	1	3	11							ROTATING BANDS		
19	1	4								AMMUNITION PROPELLANTS		
19	1	4	1							LIQUID PROPELLANTS (AMMUNITION)		
19	1	4	2							SOLID PROPELLANTS		
19	1	5								CHEMICAL KINETICS IN EXPLOSIVES AND PYROTECHNICS		
19	1	6								EXPLOSIVE MATERIALS		
19	1	6	1							DEMOLITIONS		
19	1	6	2							DESTRUCTORS		
19	1	6	3							DETONATORS		
19	1	6	4							MODERATE HEAT RESISTANT EXPLOSIVES		
19	1	7								FLARETHROWER FUELS		
19	1	8								FLARES		
19	1	8	1							AIRCRAFT FLARES		
19	1	8	2							COLORED FLARES		
19	1	8	3							FLOAT FLARES		

RESEARCH & DEVELOPMENT CAPABILITY INDEX											
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST											
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT	
				1	2	3	4	5	6		
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE	
19	1	8	4							PARACHUTE FLARES	
19	1	9								FUZES (ORDNANCE)	
19	1	9	1							BASE DETONATING	
19	1	9	2							BOMB FUZES	
19	1	9	3							ELECTRIC FUZES	
19	1	9	4							ELECTROMAGNETIC FUZES	
19	1	9	5							ELECTROSTATIC FUZES	
19	1	9	6							FUNCTIONING ELEMENTS	
19	1	9	7							GRENADE FUZES	
19	1	9	8							HYDROSTATIC FUZES	
19	1	9	9							IMPACT FUZES	
19	1	9	10							MAGNETIC FUZES	
19	1	9	11							MINE FUZES	
19	1	9	12							MORTAR FUZES	
19	1	9	13							NOSE FUZES	
19	1	9	14							POINT-DETONATING	
19	1	9	15							POINT-INITIATING	
19	1	9	16							PROJECTILES	
19	1	9	17							PROXIMITY FUZES	
19	1	9	18							RADIO PROXIMITY FUZES	
19	1	9	19							SELF-DESTRUCTING FUZES	
19	1	9	20							SUPERQUICK FUZES	
19	1	9	21							TAIL FUZES	
19	1	9	22							TIME DELAY FUZES	
19	1	10								HIGH ENERGY EXPLOSIVES	
19	1	11								HIGH HEAT RESISTANT EXPLOSIVES	
19	1	12								LARGE CALIBER AMMUNITION	
19	1	13								MINES	
19	1	13	1							ACOUSTIC MINES	
19	1	13	2							AERIAL MINES	
19	1	13	3							CONTROLLED MINES	
19	1	13	4							INFLUENCE	
19	1	13	5							LAND MINES	
19	1	13	6							MAGNETIC MINES	
19	1	13	7							MINE STERILIZERS	
19	1	13	8							MINELAYING EQUIPMENT	
19	1	13	9							PRESSURE MINES	
19	1	14								PROJECTILES (AMMUNITION)	
19	1	14	1							CANISTER	
19	1	14	2							DEFORMATION	
19	1	14	3							FLECHETTES	
19	1	14	4							HIGH CAPACITY PROJECTILES	
19	1	14	5							HYPERVELOCITY	
19	1	14	6							ILLUMINATING PROJECTILES	
19	1	14	7							INCENDIARY PROJECTILES	
19	1	14	8							SUBCALIBER PROJECTILES	
19	1	14	9							UNDERWATER PROJECTILES	
19	1	15								PYROTECHNICS	
19	1	16								SMALL CALIBER AMMUNITION	
19	1	17								SMOKE AMMUNITION	
19	1	17	1							COLORED SMOKE	

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	ANALYSIS AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
19	1	17	2							MUNITIONS (SMOKE)		
19	1	17	3							PROJECTILES (SMOKE)		
19	1	17	4							SMOKE GENERATORS		
19	1	17	5							SMOKE SCREENS		
19	1	18								SPECIAL APPLICATION EXPLOSIVES		
19	1	19								UNDERWATER PYROTECHNICS		
19	2									BOMBS		
19	2	1								ANTIPERSONNEL BOMBS		
19	2	2								AUXILIARY EQUIPMENT		
19	2	2	1							BOMB HOISTS		
19	2	2	2							CARRIERS		
19	2	2	3							RACKS		
19	2	2	4							SKIDS		
19	2	3								BOMBLETS		
19	2	4								CLUSTERS		
19	2	5								COMPONENTS (BOMBS)		
19	2	5								DELIVERY METHODS		
19	2	5	1							BOMB CASES		
19	2	5	2							BOMB FINS		
19	2	6								DEPTH BOMBS		
19	2	7								FIRE BOMBS		
19	2	8								FRAGMENTATION BOMBS		
19	2	9								GENERAL PURPOSE BOMBS		
19	2	10								GUIDED BOMBS		
19	2	11								HIGH EXPLOSIVE BOMBS		
19	2	12								INCENDIARY BOMBS		
19	2	13								RETARDATION DEVICES		
19	2	14								SMOKE BOMBS		
19	2	15								SUSPENSION AND RELEASE EQUIPMENT		
19	2	16								TRAINING WEAPONS (BOMBS)		
19	2	17								WARHEAD TECHNOLOGY (BOMBS)		
19	3									COMBAT VEHICLES		
19	3	1								ARMORED VEHICLES		
19	3	1	1							COMPONENTS AND ACCESSORIES (ARMORED VEHICLES)		
19	3	1	2							TRACK-LAYING VEHICLES		
19	3	2								COMBAT VEHICLE SUSPENSION SYSTEM		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	SYSTEMS DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
19	3	3								ENGINEER COMBAT VEHICLES		
19	3	4								FORDING AND FLOTATION AIDS		
19	3	5								INFANTRY COMBAT VEHICLES (ARMORED PERSONNEL CARRIERS)		
19	3	6								RECONNAISSANCE VEHICLES		
19	3	7								RECOVERY VEHICLES		
19	3	8								SELF-PROPELLED ARTILLERY		
19	3	9								TANKS		
19	3	9	1							CHASSIS		
19	3	9	2							COMPONENTS AND ACCESSORIES (TANKS)		
19	3	9	3							TANK TURRETS		
19	4									EXPLOSIONS, BALLISTICS AND ARMOR		
19	4	1								AIR-SURFACE EXPLOSIVES		
19	4	2								ARMOR		
19	4	2	1							AIRCRAFT ARMOR		
19	4	2	2							AIRCRAFT PERSONNEL BODY ARMOR		
19	4	2	3							ARMOR PLATE		
19	4	2	4							BODY ARMOR		
19	4	2	5							FLAK SUITS		
19	4	3								EXPLOSIONS		
19	4	3	1							AIR BURST		
19	4	3	2							BLAST		
19	4	3	3							CRATERING		
19	4	3	4							DUST		
19	4	3	5							FRAGMENTATION EXPLOSIONS		
19	4	3	6							GASES		
19	4	3	7							SURFACE BURST		
19	4	3	8							UNDERGROUND EXPLOSIONS		
19	4	3	9							UNDERWATER EXPLOSIONS		
19	4	4								EXTERIOR BALLISTICS		
19	4	4	1							BOMB TRAJECTORIES		
19	4	4	2							PROJECTILE TRAJECTORIES		
19	4	4	3							ROCKET TRAJECTORIES		
19	4	4	4							UNDERWATER TRAJECTORIES		
19	4	5								INTERIOR BALLISTICS		
19	4	6								SHOCKWAVES		
19	4	7								TERMINAL BALLISTICS		
19	4	8								TESTING TECHNIQUES FOR EXPLOSIVES		
19	4	9								UNDERWATER BALLISTICS		
19	4	10								UNDERWATER EXPLOSIONS		
19	5									FIRE CONTROL AND BOMBING SYSTEMS		
19	5	1								BOMBING SYSTEMS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
COORD. NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
19	5	1	1							AREA		
19	5	1	2							DIVE		
19	5	1	3							HIGH-ALTITUDE BOMBING		
19	5	1	4							HIGH-SPEED BOMBING		
19	5	1	5							LOW-ALTITUDE		
19	5	1	6							OFFSET BOMBING		
19	5	1	7							PRECISION BOMBING		
19	5	1	8							RADAR FIRE CONTROL SYSTEMS		
19	5	1	9							SKIP BOMBING		
19	5	1	10							STRATEGIC BOMBING		
19	5	1	11							TACTICAL BOMBING		
19	5	1	12							TOSS BOMBING		
19	5	2								FIRE CONTROL COMPUTERS		
19	5	2	1							BOMBING COMPUTERS		
19	5	2	2							FIRE CONTROL		
19	5	2	3							GUIDED MISSILE COMPUTERS		
19	5	2	4							IMPACT COMPUTERS		
19	5	2	5							PARALLAX		
19	5	3								FIRE CONTROL SYSTEMS		
19	5	3	1							AIRCRAFT FIRE CONTROL SYSTEMS		
19	5	3	2							ANTIAIRCRAFT FIRE CONTROL SYSTEMS		
19	5	3	3							ANTISUBMARINE FIRE CONTROL SYSTEMS		
19	5	3	4							ARTILLERY FIRE CONTROL SYSTEMS		
19	5	4								GUNNERY		
19	5	4	1							AERIAL GUNNERY		
19	5	4	2							AIMING CIRCLES		
19	5	4	3							ANTIAIRCRAFT GUNNERY		
19	5	4	4							DIRECTORS		
19	5	4	5							LEAD ANGLE		
19	5	4	6							NAVAL GUNNERY		
19	5	4	7							RANGE TABLES		
19	5	4	8							TARGET LEAD INDICATORS		
19	5	4	9							TARGET POSITION INDICATORS		
19	5	4	10							TRAINING GEAR (GUNNERY)		
19	5	5								SIGHTS		
19	5	5	1							RAPE		
19	5	5	2							AIMA SIGHTS		
19	5	5	3							GUN SIGHTS		
19	5	5	4							GYROSCOPIC SIGHTS		
19	5	5	5							ILLUMINATION		
19	5	5	6							OPTICAL SIGHTS		
19	5	5	7							PERISCOPIC SIGHTS		
19	5	5	8							RADAR SIGHTS		
19	5	5	9							REFLEX SIGHTS		
19	5	5	10							ROCKET SIGHTS		
19	5	5	11							TELESCOPIC GUN SIGHTS		
19	6									GUNS		
19	6	1								AIRCRAFT GUNS		
19	6	2								ANTIAIRCRAFT GUNS		
19	6	3								ANTITANK GUNS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST

CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
19	6	4								ARTILLERY GUNS
19	6	5								AUTOMATIC WEAPONS
19	6	5	1							ANTI-PERSONNEL WEAPONS
19	6	6								DUAL PURPOSE GUNS
19	6	7								ELECTRIC GUNS
19	6	8								GRENADE LAUNCHERS
19	6	9								GUN AUXILIARY EQUIPMENT
19	6	9	1							BARREL ATTACHMENTS
19	6	9	2							GUN TURRETS
19	6	9	3							LINK CHUTES
19	6	9	4							LOADERS
19	6	9	5							MOUNTS
19	6	9	6							ROUNDS COUNTERS
19	6	10								GUN COMPONENTS
19	6	10	1							BREECH MECHANISMS
19	6	10	2							CARTRIDGE CASE EXTRACTORS
19	6	10	3							CHARGES
19	6	10	4							FEED MECHANISMS
19	6	10	5							GUN BARRELS
19	6	10	6							GUN FIRING MECHANISMS
19	6	10	7							RECOIL MECHANISMS
19	6	10	8							RIFLING
19	6	11								HOWITZERS
19	6	12								MORTARS
19	6	13								NAVAL GUNS
19	6	14								RECOILLESS WEAPONS
19	6	15								SELF PROPELLED GUNS
19	6	16								SMALL ARMS
19	6	17								SPOTTING RIFLES
19	7									ROCKETS
19	7	1								ARTILLERY ROCKETS
19	7	2								COMPONENTS (ROCKETS)
19	7	2	1							ROCKET CASES
19	7	2	2							CLOSURE CUPS
19	7	2	3							ROCKET FINS
19	7	2	4							ROCKET HEADS
19	7	2	5							ROCKET IGNITERS
19	7	2	6							ROCKET LAUNCHERS
19	7	2	7							ROCKET NOSES
19	7	3								DUCTED ROCKETS
19	7	4								HYBRID ROCKETS
19	7	5								ROCKET LAUNCHERS

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	SYSTEMS DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
14	7	6								ROCKET WARHEADS + FUZES		
14	7	6	1							ADAPTION KITS		
14	7	6	2							AIRFRAME		
19	7	6	3							CONTROL CABLE		
19	7	6	4							FINS		
19	7	6	5							IGNITION SEPARATION ASSEMBLY		
19	7	6	6							IGNITER		
19	7	6	7							NTSE CAP		
19	7	6	8							PARACHUTE PACKAGE		
19	7	6	9							ROCKET MOTOR		
19	7	7								UNDERWATER ROCKETS		
19	8									UNDERWATER ORDNANCE		
19	9	1								DEPTH CHARGES		
19	9	1	1							DEPTH CHARGE COMPONENTS		
19	8	2								HYDROSTATICS		
19	8	3								MINE COMPONENTS		
19	8	3	1							DETECTORS		
19	8	3	2							MINE BOOSTERS		
19	8	3	3							MINE CASES		
19	8	3	4							MINE FUZES		
19	8	3	5							STERILIZERS		
19	8	4								MINELAYING		
19	8	4	1							MINELAYERS		
19	8	4	2							MINFFIELDS		
19	8	4	3							UNDERWATER MINELAYING EQUIPMENT		
19	8	5								MINES		
19	8	5	1							CONTACT MINES		
19	8	5	2							TOWED MINES		
19	8	5	3							UNDERWATER MINES		
19	8	6								TORPEDO COMPONENTS		
19	8	6	1							DATA PROCESSING EQUIPMENT		
19	8	6	2							TORPEDO FUZES		
19	8	6	3							TORPEDO LAUNCHERS		
19	8	6	4							TORPEDO MOTORS		
19	8	6	5							TORPEDO PROPELLANTS		
19	8	6	6							TURBINES		
19	8	6	7							TORPEDO WARHEADS		
19	8	7								TORPEDES		
19	8	7	1							ACOUSTIC TORPEDOES		
19	8	7	2							AIRCRAFT TORPEDOES		
19	8	7	3							HUMING		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPERIMENTAL DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
20										PHYSICS		
20	1									ACOUSTICS		
20	1	1								ACOUSTIC WAVES		
20	1	2								ACOUSTIC INTENSITY		
20	1	3								CHAMBERS		
20	1	4								DAMPING		
20	1	5								FREQUENCY (ACOUSTICS)		
20	1	6								INSTRUMENTATION		
20	1	7								NOISE LEVEL, AIRCRAFT AND AIRCRAFT COMPONENTS		
20	1	8								PITCH		
20	1	9								RESONANCE		
20	1	10								SOUND PROPAGATION		
20	1	11								SOUND TRANSMISSION		
20	1	12								SYSTEMS STUDIES		
20	1	13								ULTRASONICS		
20	1	14								VIBRATORY SYSTEMS		
20	2									CRYSTALLOGRAPHY		
20	2	1								CRYSTALLINE FORMS PROPERTIES		
20	2	2								CRYSTALLINE FORMS STRUCTURE		
20	2	3								IMPURITIES		
20	2	4								LATTICES		
20	2	5								MAGNETISM		
20	2	5	1							MAGNETIC MATERIALS		
20	2	5	2							MAGNETIC FIELD RELATIONS		
20	2	5	3							MAGNETOMETERS		
20	2									ELECTRICITY AND MAGNETISM		
20	3	1								ELECTRICAL THEORY		
20	3	2								ELECTRICITY		
20	3	2	1							CIRCUIT ELEMENTS		
20	3	2	2							ELECTRICAL CURRENT		
20	3	2	3							ELECTROMAGNETIC INDUCTION		
20	3	2	4							ELECTROMAGNETIC WAVES		
20	3	2	5							INSTRUMENTS AND PROBES		
20	3	2	6							POTENTIAL DISTRIBUTION		
20	4	1								ELECTRODYNAMICS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPERIMENTAL DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANUFACTURING AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
20	3	4								ELECTROSTATICS		
20	3	5								MAGNETIC PHENOMENA THEORY		
20	3	6								MAGNETODYNAMICS		
20	4									FLUID MECHANICS		
20	4	1								AERODYNAMICS		
20	4	2								DYNAMICS OF FLUIDS		
20	4	3								HYDRODYNAMICS		
20	4	4								HYDROSTATICS		
20	5									MASERS AND LASERS		
20	5	1								LASERS		
20	5	2								LIGHT AMPLIFICATION DEVICES		
20	5	3								MASERS		
20	5	4								MICROWAVE DEVICES		
20	6									OPTICS		
20	6	1								RADIOMETERS		
20	6	2								ELECTROMAGNETIC RADIATION STUDIES (OPTICAL TO MICROWAVE REGION)		
20	6	3								ELECTRON AND MICROWAVE OPTICS		
20	6	4								GEOMETRICAL OPTICS		
20	6	5								INFRARED RADIATION		
20	6	6								INSTRUMENTATION		
20	6	7								LIGHT GENERATION		
20	6	8								LIGHT TRANSMISSION		
20	6	9								MASS SPECTROMETRY		
20	6	10								MONOCROMETERS AND SPECTROGRAPHS		
20	6	11								OPTICAL IMAGING		
20	6	12								PHOTOMULTIPLIERS		
20	6	13								PHYSICAL OPTICS		
20	6	14								RADIOMETERS		
20	6	15								QUANTUM MECHANICS		
20	6	15								RADIOMETRY AND PHOTOMETRY		

RESEARCH & DEVELOPMENT CAPABILITY INDEX													
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST													
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT			
				RESEARCH	EXPLOIATION	DEVELOPMENT	DEVELOPMENT	ENGINEERING	OPERATIONAL				
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE			
20	6	17								REFLECTION, REFRACTION			
20	6	18								ULTRAVIOLET AND X-RAYS			
20	6	19								VISIBLE RADIATION			
20	7									PARTICLE ACCELERATORS			
20	7	1								BETATRONS			
20	7	2								REBETRONS			
20	7	3								CYCLOTRONS			
20	7	4								SYNCHROTRONS			
20	8									PARTICLE PHYSICS			
20	8	1								COSMIC RAYS			
20	8	2								ELEMENTARY PARTICLES (SUBATOMIC)			
20	8	3								NUCLEAR REACTIONS			
20	8	4								OPTICAL EQUIPMENT			
20	8	5								PHOTODETECTORS			
20	8	6								PLASMA JETS			
20	8	7								VAN ALLEN RADIATION			
20	9									PLASMA PHYSICS			
20	9	1								MAGNETOHYDRODYNAMICS			
20	9	2								PINCH EFFECT			
20	9	3								PLASMA OSCILLATIONS			
20	9	4								PLASMA PROPERTIES			
20	10									QUANTUM THEORY			
20	10	1								NONRELATIVISTIC QUANTUM THEORY			
20	10	2								QUANTUM MECHANICS			
20	10	3								QUANTUM STATISTICS			
20	10	4								RELATIVISTIC QUANTUM THEORY			
20	10	5								RELATIVITY THEORY			
20	11									SOLID MECHANICS			
20	11	1								DYNAMIC ANALYSIS			
20	11	2								DYNAMICS			
20	11	2	1							BUCKLE PLATES			

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
20	11	2	2							COLUMNS		
20	11	2	3							CORNERS		
20	11	2	4							PANELS		
20	11	3								ELASTIC PROPERTIES		
20	11	3	1							COMPRESSION (ELASTICITY)		
20	11	3	2							LOAD RATE		
20	11	4								EQUILIBRIUM		
20	11	4	1							EQUILIBRIUM DISPLAY		
20	11	4	2							FATIGUE (MATERIALS)		
20	11	4	3							FREQUENCY (EQUILIBRIUM)		
20	11	5								KINEMATICS		
20	11	6								KINETICS		
20	11	7								PLASTICITY		
20	11	8								RELATIVISTIC DYNAMICS		
20	11	9								SHOCK		
20	11	9	1							IMPACT SHOCK		
20	11	9	2							INTERVAL		
20	11	9	3							SPECTRA		
20	11	9	4							WAVE FORMS		
20	11	10								STRESS ANALYSIS		
20	11	10	1							ENERGY-TO-BREAK		
20	11	10	2							STRESS RECOVERY		
20	11	10	3							STRESS STRAIN DIAGRAMS		
20	11	11								STRUCTURAL MECHANICS		
20	12									SOLID STATE PHYSICS		
20	12	1								CRYOGENIC MATERIAL PROPERTIES		
20	12	2								CRYOGENIC TEMPERATURES		
20	12	3								CRYOSARS		
20	12	4								SEMICONDUCTOR FUNDAMENTALS		
20	12	5								SEMICONDUCTORS (MATERIALS)		
20	12	6								STRUCTURE AND PROPERTIES OF SOLIDS (EXCEPT CRYSTALS AND METALS)		
20	12	7								THIN FILM MICROELECTRONIC		
20	13									THERMODYNAMICS		
20	13	1								BLACKBODY RADIATION		
20	13	2								CRYOGENICS, CRYOSTATS, CRYOPUMPING		
20	13	3								CRYOGENIC PHENOMENA		
20	13	4								CRYOGENICS		

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	DESIGN DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
20	13	5								EQUATIONS OF STATE
20	13	6								FREE ENERGY, ENTHALPY, ENTROPY
20	13	7								HEAT TRANSFER
20	13	8								KINETIC THEORY
20	13	9								LOW TEMPERATURE PHENOMENA
20	13	10								THERMAL ABSORPTANCE AND TRANSMISSION
20	13	11								THERMAL RADIATION
20	13	12								THERMAL REFLECTANCE
20	13	13								THERMODYNAMIC THEORY
20	14									WAVE PROPAGATION
20	14	1								GENERATION (WAVE PROPAGATION)
20	14	2								INFRARED
20	14	3								INFRARED OPTICAL DETECTION
20	14	4								MICROWAVE OPTICS
20	14	5								MODULATION (RADIOFREQUENCY WAVES)
20	14	6								RADIO FREQUENCY SPECTROSCOPY
20	14	7								RADIOFREQUENCY PROPAGATION
20	14	8								SCATTER PROPAGATION
20	14	9								SHOCK WAVE PROPAGATION IN SOILS AND ROCK
20	14	10								SOUND
20	14	11								ULTRA-VIOLET
20	14	12								VHF
20	14	13								VIBRATION AND SHOCK
20	14	14								WAVE PROPAGATION
20	14	15								X-RAY

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	SCOPE		
21										PROPULSION AND FUELS		
21	1									AIR-BREATHING ENGINES		
21	1	1								LIQUID AIR CYCLE ENGINES		
21	2									COMBUSTION AND IGNITION		
21	2	1								AUTOIGNITION		
21	2	2								COMBUSTION		
21	2	3								COMBUSTION PRODUCT STUDIES		
21	2	4								COMBUSTION SYSTEMS		
21	2	5								COMPRESSION IGNITION		
21	2	6								CONTINUOUS COMBUSTION		
21	2	7								DISTRIBUTORS		
21	2	8								ENGINE IGNITERS		
21	2	9								EXTERNAL IGNITION		
21	2	10								FLAME STABILITY		
21	2	11								IGNITION		
21	2	12								INTERMITTENT COMBUSTION		
21	2	13								SPARK PLUGS		
21	2	14								STARTERS (IGNITION)		
21	2	15	1							SUPERSONIC COMBUSTION		
21	2	15	2							EXPERIMENTAL		
21	2	15								THEORETICAL		
21	3									ELECTRIC PROPULSION		
21	3	1								ARC JET ENGINES		
21	3	2								ELECTRICAL ENGINES		
21	3	3								ION ENGINES		
21	3	4								PLASMA SYSTEMS		
21	3	5								RESISTO-JET ENGINES		
21	4									FUELS		
21	4	1								COMPRESSIBLE FLUID FLOW		
21	4	2								EXOTIC FUELS		
21	4	3								FUEL HANDLING AND STORAGE		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	DESIGN DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
21	4	4								FUEL PERFORMANCE		
21	4	5								FUEL PRODUCTION		
21	4	6								FUEL STORAGE		
21	4	7								GASEOUS FUELS		
21	4	8								HYDROCARBON FUELS		
21	4	9								LIQUID FUELS		
21	4	10								SOLID FUELS		
21	5									JET AND GAS TURBINE ENGINES		
21	5	1								AIRCRAFT ENGINES		
21	5	2								COMBUSTION SYSTEM EQUIPMENT		
21	5	3								COMPRESSORS AND TURBINES		
21	5	4								CONTROL EQUIPMENT (ENGINES)		
21	5	5								ENGINE TEST CELLS		
21	5	6								FUEL AND LUBRICATION SYSTEMS		
21	5	7								GAS TURBINE ENGINES		
21	5	8								HYDRODUCTS		
21	5	9								HYDROJET ENGINES		
21	5	10								INDUCTION AND EXHAUST SYSTEMS		
21	5	11								JET ENGINES		
21	5	12								RAMJET ENGINES AND AFTERBURNERS		
21	5	13								REGENERATORS		
21	5	14								TURBOJET ENGINES		
21	5	15								TURBOPROP ENGINES		
21	5	16								TURBOSHAFT ENGINES		
21	5	17								TURBOSUPERCHARGERS AND POWER RECOVERY TURBINES		
21	6									NUCLEAR PROPULSION		
21	6	1								AIR DEVICES		
21	6	2								AIRCRAFT NUCLEAR PROPULSION		
21	6	3								COMPONENTS AND ACCESSORIES (NUCLEAR ENGINES)		
21	6	4								CONTROL (NUCLEAR PROPULSION)		
21	6	5								COOLING (NUCLEAR PROPULSION)		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				1	2	3	4	5	6			
FIELD	GROUP	SECTION	UNIT	RESEARCH	ENGINEERING	DESIGN	DEVELOPMENT	OPERATIONAL	MANAGEMENT	SCOPE		
21	6	6								ENGINE DESIGN (NUCLEAR)		
21	6	7								FUELS (NUCLEAR)		
21	6	8								GROUND DEVICES		
21	6	9								INSTALLATION		
21	6	10								LAUNCH SYSTEM PROPULSION		
21	6	11								MARINE DEVICES		
21	6	12								MARINE PROPULSION SYSTEMS		
21	6	13								MATERIALS (NUCLEAR PROPULSION)		
21	6	14								PERFORMANCE AND OPERATION (NUCLEAR ENGINES)		
21	6	15								SPACE PROPULSION		
21	6	16								SHIELDING (NUCLEAR PROPULSION)		
21	7									RECIPROCATING ENGINES		
21	7	1								AIR CLEANERS		
21	7	2								COMPRESSION IGNITION ENGINES		
21	7	3								DIESEL ENGINES		
21	7	4								ENGINE ELECTRICAL EQUIPMENT		
21	7	5								FREE PISTON ENGINES		
21	7	6								FUEL AND LUBRICATION SYSTEMS		
21	7	7								FUEL INJECTORS		
21	7	8								FUEL SYSTEMS		
21	7	9								HYBRID ENGINES		
21	7	10								INDUCTION AND EXHAUST SYSTEMS		
21	7	11								INTERNAL COMBUSTION ENGINES		
21	7	12								OTHER ENGINES		
21	7	13								POWER AND DRIVE SYSTEMS		
21	7	14								SPARK IGNITION ENGINES		
21	7	15								STARTERS (ENGINES)		
21	7	16								STEAM ENGINES		
21	7	17								VAPOR CYCLE ENGINES		
21	8									ROCKET MOTORS AND ENGINES		

RESEARCH & DEVELOPMENT CAPABILITY INDEX													
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST													
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT			
FIELD	GROUP	SECTION	UNIT	RESEARCH	EXPLORATORY	ADVANCED	ENGINEERING	OPERATIONAL	MANAGEMENT	SCOPE			
				1	2	3	4	5	6				
21	R	1								COMBUSTION CHAMBERS			
21	R	2								INJECTORS			
21	R	3								JET ASSISTED TAKE OFF (JATO)			
21	R	4								LIQUID ROCKET MOTORS			
21	R	4	1							AIR AUGMENTATION			
21	R	4	2							COOLED UNCOOLED NOZZLES			
21	R	4	3							FITTINGS			
21	R	4	4							HAZARD PROTECTION			
21	R	4	5							INJECTORS			
21	R	4	6							PRESSURIZATION SYSTEMS			
21	R	4	7							PUMPS			
21	R	4	8							TANKAGE			
21	R	4	9							THRUST CHAMBERS			
21	R	4	10							THRUST VECTOR CONTROL SYSTEMS			
21	R	4	11							VALVES AND REGULATORS			
21	R	5								NOZZLES			
21	R	6								PROPELLANT FEED SYSTEMS			
21	R	7								PROPULSION HARDWARE			
21	R	8								ROCKET ENGINE TANKS			
21	R	9								ROCKET MOTOR TEST CELLS			
21	R	9	1							ALTITUDE SIMULATION			
21	R	9	2							THRUST MEASUREMENT			
21	R	10								ROCKET MOTORS AND NOZZLES			
21	R	11								SOLID ROCKET MOTORS			
21	R	11	1							AIR AUGMENTATION			
21	R	11	2							CASES			
21	R	11	3							COMBUSTION			
21	R	11	4							HAZARDS			
21	R	11	5							IGNITION			
21	R	11	6							INSPECTION			
21	R	11	7							LAUNCHES FLIGHT PROBLEMS			
21	R	11	8							LINER BOND SYSTEMS			
21	R	11	9							MANDRIL			
21	R	11	10							MECHANICAL BEHAVIOR			
21	R	11	11							MOTOR DESIGN			
21	R	11	12							NOZZLES			
21	R	11	13							STRUCTURES			
21	R	11	14							THERMAL PROTECTION			
21	9									ROCKET PROPELLANTS			
21	9	1								ADDITIVES			
21	9	2								AGE ROCKET PROPULSION			
21	9	3								CHEMICAL PROPELLANT PERFORMANCE			
21	9	4								CHEMICAL PROPELLANT PRODUCTION			
21	9	5								CHEMICAL PROPELLANT STORAGE AND HANDLING			

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPERIMENTAL DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
21	9	6								CHEMICAL REACTION KINETICS		
21	9	7								COMBUSTION TECHNOLOGY		
21	9	8								HYBRID PROPELLANTS		
21	9	9								LIQUID ROCKET PROPELLANTS		
21	9	9	1							BINDERS (ROCKET PROPELLANTS)		
21	9	9	2							CRYOGENICS		
21	9	9	3							HYBRIDS		
21	9	9	4							MONOPROPELLANT		
21	9	9	5							OXIDIZERS, (SYNTHESIS, CHARACTERIZATION, PRODUCTION)		
21	9	9	6							PLASTICIZERS (PROPELLANTS)		
21	9	9	7							PROPELLANT COMBINATIONS		
21	9	9	8							ROCKET FUELS (LIQUID PROPELLANTS)		
21	9	9	9							STORABLE		
21	9	9	10							THIXOTROPIC		
21	9	10								ROCKET PROPELLANT OPERATIONS		
21	9	10	1							PROPELLANT HANDLING AND STORAGE		
21	9	10	2							ROCKET PROPELLANT PERFORMANCE		
21	9	10	3							ROCKET PROPELLANT PRODUCTION		
21	9	10	4							ROCKET PROPELLANT SAFETY		
21	9	11								SOLID ROCKET PROPELLANTS		
21	9	11	1							BINDERS (SYNTHESIS, CHARACTERIZATION, PRODUCTION)		
21	9	11	2							FUELS (SYNTHESIS, CHARACTERIZATION, PRODUCTION)		
21	9	11	3							OXIDIZERS, (SYNTHESIS, CHARACTERIZATION, PRODUCTION)		
21	9	12								SOLAR PROPULSION		

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
22										SPACE TECHNOLOGY		
22	1									ASTRONAUTICS		
22	1	1								ENVIRONMENT SIMULATION		
22	1	1	1							LOW DENSITY, HYPERVELOCITY		
22	1	1	2							SOLAR SIMULATION		
22	1	1	3							SPACE CHAMBERS		
22	1	1	4							TEST INSTRUMENTATION		
22	1	1	5							TESTING TECHNIQUES		
22	1	2								OPERATIONS IN SPACE		
22	1	2	1							ORBITAL RENDEZVOUS		
22	1	2	2							RENDEZVOUS AND DOCKING		
22	1	2	3							SPACE EXPLORATION		
22	1	2	4							SPACE MAINTENANCE		
22	1	3								SOLAR WIND		
22	2									SPACECRAFT		
22	2	1								CREW AND LIFE SUPPORT SYSTEMS		
22	2	1	1							ENVIRONMENTAL CONTROL SYSTEM		
22	2	1	2							HUMAN FACTORS		
22	2	1	3							PORTABLE ASTRONAUT EQUIPMENT		
22	2	1	4							SPACE SUITS		
22	2	1	5							SUPPORTING INSTRUMENTATION		
22	2	1	6							THERMAL CONTROL SYSTEM		
22	2	2								FACILITIES FOR SPACECRAFT RESEARCH SUPPORT		
22	2	2	1							GROUND BASED DYNAMIC SIMULATORS		
22	2	2	2							EQUIPMENT CARRYING		
22	2	2	3							MAN-CARRYING-SPACE		
22	2	2	4							MAN-CARRYING-ASTRONAUTICS		
22	2	2	5							MAN-CARRYING-LIFE SCIENCES		
22	2	3								SPACECRAFT CONTROL SYSTEMS,		
22	2	3	1							COMMAND MODULES		
22	2	3	2							CONTROL SYSTEM		
22	2	3	3							CONTROL SYSTEM COMPONENT		
22	2	3	4							DISPLAY DEVICES/SYSTEMS		
22	2	3	5							GUIDANCE		
22	2	3	6							GUIDANCE AND NAVIGATION SYSTEM		
22	2	3	7							GRAVITY GRADIENT		
22	2	3	8							INERTIAL GUIDANCE		
22	2	3	9							POWER SYSTEMS		
22	2	3	10							SEPARATION SYSTEMS		
22	2	3	11							SPACECRAFT FLIGHT INSTRUMENTATION		
22	2	3	12							THERMAL CONTROL		
22	2	4								SPACECRAFT DAMAGE ASSESSMENT AND VULNERABILITY STUDIES		
22	2	4	1							DAMAGE ASSESSMENT		
22	2	4	2							VULNERABILITY STUDIES		
22	2	5								SPACECRAFT DESIGN AND CONSTRUCTION		
22	2	5	1							COMMUNICATION SYSTEMS		
22	2	5	2							CONFIGURATION DESIGN		
22	2	5	3							DYNAMIC ANALYSIS		
22	2	5	4							ELECTRO-MECHAN DESIGN, INSTALL		
22	2	5	5							ELECTRONIC SYSTEMS INTEGRATION		

RESEARCH & DEVELOPMENT CAPABILITY INDEX										
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST										
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	MANAGEMENT AND SUPPORT	
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE
22	2	5	6							HEAT SHIELD DESIGN
22	2	5	7							PROPULSION SYS DESIGN, INSTALL
22	2	5	8							STRESS ANALYSIS
22	2	5	9							STRUCTURAL ANALYSIS
22	2	5	10							STRUCTURAL DESIGN
22	2	5	11							SYSTEM DESIGN AND ANALYSIS
22	2	5	12							THERMAL ANALYSIS
22	2	5	13							THERMAL DESIGN
22	2	5	14							WEIGHT CONTROL
22	2	6								SPACECRAFT GROUND SUPPORT OPERATIONS
22	2	6	1							CREW ESCAPE
22	2	6	2							ENVIRONMENTAL CONTROL
22	2	6	3							FACILITY DESIGN
22	2	6	4							GROUND MAINTENANCE
22	2	6	5							HUMAN ENGINEERING
22	2	6	6							MISSION PLANNING
22	2	6	7							SPACECRAFT STRUCTURES
22	2	7								SPACECRAFT TECHNOLOGY
22	2	7	1							ENVIRONMENTAL SIMULATION
22	2	7	2							HIGH TEMPERATURE BEARING TECHNOLOGY
22	2	7	3							MAGNETIC FIELDS
22	2	7	4							ORDNANCE PYROTECHNICS
22	2	7	5							POWER CONTROL
22	2	7	6							PNEUMATICS
22	2	7	7							RADIATION PROTECTION, SHIELDING
22	2	7	8							STERILIZATION
22	2	7	9							VEHICLE DYNAMICS, ALTITUDE CONTROL
22	2	7	10							VIBRATIONS + DYNAMIC RESPONSE
22	2	8								SPACE STATIONS
22	3									SPACECRAFT TRAJECTORIES AND REENTRY
22	3	1								AERODYNAMIC HEATING
22	3	2								AIRLOADS
22	3	3								ASCENT TRAJECTORIES
22	3	4								ATTITUDE ANALYSIS
22	3	5								ATTITUDE DETERMINATION
22	3	6								FLIGHT AND REENTRY SIMULATORS
22	3	6	1							RADIATION SOURCES
22	3	6	2							CONNECTIVE ARC HEATERS
22	3	6	3							RADIATION TRANSFER OPTICS
22	3	6	4							ELECTRICAL DISCHARGE EQUIPMENT
22	3	6	5							SHOCK TUBES
22	3	7								LANDING AND RECOVERY
22	3	8								ORBIT ANALYSIS
22	3	9								ORBIT DETERMINATION
22	3	10								ORBITAL MECHANICS

RESEARCH & DEVELOPMENT CAPABILITY INDEX												
SCIENTIFIC AND TECHNOLOGICAL FIELDS OF INTEREST												
CODE NO.				CATEGORY						NAME AND ADDRESS OF APPLICANT		
				RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT	ENGINEERING DEVELOPMENT	OPERATIONAL DEVELOPMENT	PRODUCTION AND SUPPORT			
FIELD	GROUP	SECTION	UNIT	1	2	3	4	5	6	SCOPE		
22	3	11								PLANETARY ENTRY ANALYSIS		
22	3	12								REENTRY FLIGHT PATH ANALYSIS		
22	3	13								SPACECRAFT INSTRUMENTATION		
22	3	14								SPACECRAFT TRAJECTORY DATA		
22	3	15								SPACE MECHANICS		
22	3	16								STABILITY AND CONTROL		
22	4									SPACECRAFT LAUNCH VEHICLES AND GROUND SUPPORT		
22	4	1								ELECTRONIC GROUND SUPPORT EQUIPMENT		
22	4	2								GROUND FUELING SYSTEMS		
22	4	3								GROUND HANDLING MAINTENANCE		
22	4	4								HANDLING AND LAUNCHING		
22	4	5								LAUNCH FACILITY DESIGN		
22	4	6								LAUNCH OPERATIONS		
22	4	7								LAUNCHING CHECKING AND GROUND SUPPORT EQUIPMENT		
22	4	8								MECHANICAL GSE		
22	4	9								ORBITAL OPERATIONS		

APPENDIX 3
FRANKFORD ARSENAL REPORT R-1838
VSMF
VENDOR SELECTOR QUESTIONNAIRE

**In use by VSMF for obtaining data for standard
VSMF vendor selector product information.**

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to the government for reproduction of these for
publication in Frankford Arsenal Report R-1838**

VSMF VENDOR SELECTOR

A. GENERAL INFORMATION

1. Full Name of Company (Including Division or Subsidiary) (See L Page 5)

Federal Supply Code Number

2. Mailing Address

Zip Code

3. Billing Address

Zip Code

4. Telephone Number

Area Code

TWX

5. Persons to Contact:

Name

Title

Ext. No.

Mail No.

6. Type of Ownership: (Check as appropriate)

Proprietorship

Partnership

Corporation (Publicly Held)

Corporation (Privately Held)

State of Incorporation

Date of Incorporation

Years in Business

7. Type of Business: (Check as appropriate)

Manufacturer

Fabricator

Processor

Engineering

Consultant

Construction

Laboratory Testing

Distributor

Non Profit

Other

8. Owners or Officers:

Name

Title

Years with Company

President

Sales Manager

Production Manager

Engineering Manager

Quality Manager

Purchasing Manager

Contracts Manager

9. Persons Authorized to Sign Bids and Contracts:

Name

Title

Ext. No.

Mail No.

10. Are you familiar with the Armed Services Procurement Regulations? Yes No

11. Are you prepared to do business in accordance with the Regulations? Yes No

*12. Classified as a Small Business Classified as a Large Business

13. General Capabilities (See K Page 5)

14. Have you performed work under U. S. Government Prime Contracts?

Yes No or Subcontracts? Yes No in the last five years?

Agency or Company

Date

Contract Number

15. Have you been surveyed by a Government Agency or by a Major Prime Contractor in the last year? Yes No

Government Agency or

Major Prime Contractor

Date

Type of Survey

Purpose of Survey

B. PERSONNEL

1. Total number of Employees

Direct

Indirect

Engineering

Production

Quality Control

R & D

Administrative

Production Control

Purchasing

Other

Number of employees by shift: 1st

2nd

3rd

*Small Business Definition: Generally, a Small Business is not dominant in its field of operations and, with its affiliates, employs fewer than 500 employees.

NOTE: If in doubt, check with local Small Business Administration Office.

Company Name

C. LABOR RELATIONS

1. Do you have a Labor Union Agreement? Yes No
Name Bargaining Agent Contract
Local Number(s) Expiration
Groups Represented Date
2. Do you have a strike agreement? Yes No Conditions
3. Strike History: Date, Duration and Reason for previous Labor Disputes:
4. Are there any wage provisions covered in existing contracts? Yes No
Are there any wage provisions covered in pending contracts? Yes No
What is the effectivity date?
5. Is a bonus or incentive plan in effect? Yes No Describe

D. FACILITY INFORMATION

1. Do you have a security manual which defines policy and procedures? Yes No
2. What physical capabilities do you have for safeguarding classified material?
3. Company Security Officer
Phone Ext. Mail No.
4. Structure, Type Age
5. Total area under roof sq. ft. Engineering sq. ft.
Production sq. ft. Administrative sq. ft. Other
- Area for Expansion sq. ft.
6. Total Property in Acres
7. Percent of Plant Area Owned Leased Lease Expires
8. Percent of Plant Area considered as a "Rent Free Facility"
9. Do you have Government Furnished Tooling in the Plant? Yes No Percent
10. Are clean-room facilities available within your plant? Yes No If yes, what class?
to what specification?

E. MAJOR CLASSES OR TYPES OF PRODUCTION MACHINES AND EQUIPMENT AVAILABLE

F. TRANSPORTATION FACILITIES

1. Private Rail Spur? Yes No Motor Freight Trucks? Yes No
Nearest Airport
2. Major Commercial Airlines
3. Major Airfreight Lines
4. Motor Freight Lines
5. Railroads

G. QUALITY CONTROL AND TESTING

1. General
- a. Is Q.C. Dept. based on MIL-Q-9858 MIL-Q-9858A MIL-1-45388A MIL-C-45663A NASA200
- b. Do You have written Q.C. Procedures for all phases of operation? Yes No
- c. Do procedures contain Q.C. requirements for vendors? Yes No
- d. Do your purchase orders reflect these requirements? Yes No

Company Name

- e. Do you perform source inspection at your vendors' facilities? Yes No
f. Are your commercial and military parts stocked separately? Yes No
g. Are all incoming parts, materials and assemblies inspected on receipt? Yes No
h. Do you control and segregate defective materials? Yes No
i. Do you evaluate cause of defective materials? Yes No
j. Do you have a system for positive corrective action? Yes No
k. Do you use inspection stamps and document materials inspected? Yes No
l. Do you maintain a Customer and Military specification file? Yes No
m. Do you have a procedure for Engineering and Contract changes? Yes No
2. Testing
- a. Do you maintain a materials testing laboratory for control of quality?
Physical Properties Chemical Properties
- b. Do you maintain a system for tool and gage calibration? Mechanical Standards Electrical Standards
Are they traceable to the U. S. Bureau of Standards? Mechanical Electrical
- c. Do you maintain environmental test facilities for the following? Altitude Acceleration Vibration
Shock Humidity Sand and Dust Salt Spray Fungus Radio Interference
Other
- d. Do you maintain facilities for functional test of parts, sub-assemblies and assemblies? Mechanical
Electrical-electronic Hydraulic Pneumatic
- e. If you do not have facilities for the above Testing, list facilities which are available to you to perform the Testing.
Name Address
3. Statistical Quality Control
- a. Do you practice statistical Quality Control in the following areas?
Receiving Inspection In-Process Inspection Final Acceptance Special Processes
Other
- b. Is Statistical Sampling performed in accordance with MIL-STD-105C?
- c. Do you have written procedures for applying sampling techniques?
4. Documentation
- a. Do you retain records of inspections and test on tooling in and out of plant?
- b. Are records maintained on Certification of Personnel? (Welding, etc., state)
- c. Are records maintained on Certification of Processes?
- d. Are records maintained on the following? Receiving Inspection Shipping Stock Room
In-Process Inspection Measuring and Test Equipment Final Acceptance Drawing and Contract
Changes Defective Material Control Acceptance Stamping
5. Special Test Equipment
6. Suppliers performing special processing and services such as welding, heat treating, plating, anodizing, painting, penetrant inspection, magnetic particle inspection, etc.
Name Address Service
7. Cognizant Armed Services Agency
- H. ACCOUNTING AND FINANCIAL
1. Have your Accounting Procedures been approved by an Armed Services Agency? Yes No
Agency Date
2. Have your direct labor rates overhead G&A rates been approved?
3. Net worth of Company \$

Company Name

4. Historical (3 years) and forecasted (2 years) annual sales
19 \$ 19 \$ 19 \$ 19 \$ 19 \$
5. Sales, Prime Contracts \$ Subcontracts \$ Commercials \$
6. Present Backlog \$ Covers Period to
7. Ratio of Government to Commercial
8. Public Accountant
9. Bank

I. ADMINISTRATIVE

1. Do you use Program Evaluation Review Techniques (PERT)? Yes No Other? (State)
2. Do you have Tool Design & Change Analysis?
3. Do you have a Value Engineering Program? Yes No
4. Have your Purchasing Procedures been approved by a Government Agency?
Yes No Agency Date
5. Do you have a Small Business Program? Yes No
6. Are you capable of working under any of the following types of contracts?
Cost Plus Fixed Fee Cost Plus Incentive Fee Time and Material Price Redeterminable
Fixed Price Fixed Price Incentive Fee
7. Have you Procedures for Controlling, Identifying and Protecting Government Furnished Property? Yes No
8. Have you performed under a High Reliability Contract? Yes No
9. If not, do you have the capability to perform a High Reliability Contract? Yes No

J. PRODUCTS AND SERVICES

SHELF ITEMS

*N S ESTIMATED DELIVERY TIME

SPECIAL ITEMS

*N S ESTIMATED DELIVERY TIME

*Indicate normal (N) or special (S) handling by marking appropriate space.

Company Name

K. SPECIAL AREAS OF EXPERIENCE

L. NAMES BY WHICH COMPANY WAS FORMERLY KNOWN

M. AREA AND LOCAL REPRESENTATIVES

Name	Address	Contact	Phone
------	---------	---------	-------

The information contained in this questionnaire is complete and accurate in all details to the best of my knowledge and belief.

Signature of Authorized Official	Title
----------------------------------	-------

APPENDIX 4

FRANKFORD ARSENAL REPORT R-1838

SAMPLE KEY FRAMES

CARTRIDGE NO. 5

VSMF - QDRI

Best Available Copy

USAMC

Q·D·R·I

Qualitative Development Requirements Information File

A4-1

Cartridge No. 5

September, 1966



Produced by
Information Handling Services, Inc.

VSAMF DATA CONTROL SYSTEM

QDRI FILE

1-100 by Information Handling Services, Inc.
All rights reserved

* New statement to
be negotiated

Product information may be copied by USAMC personnel for only
copying; any version of the index file is to be kept without further
from Information Handling Services, Inc.

* LINE CHANGES PROPOSED BY USAMC

APPENDIX 4

for use of

F I L M E D

Each DRI registrant's information has been separated into the following six categories for quick and easy access and retrieval:

- 1. REGISTERED ORGANIZATION VERIFICATION STATUS
- 2. LATEST VALID POLICY AGREEMENT
- 3. CAPABILITIES AND FIELDS OF INTEREST -
DOD R&D CAPABILITY INDEX OR EQUIVALENT
- 4. RESUMES AND PROFILES - KEY PERSONNEL
- 5. LISTINGS OF CONTRACTS - CURRENT - LAST 5 YEARS
- 6. DESCRIPTIVE CATALOG PAGES
FACILITIES - EXPERIENCE - CAPABILITIES -
PRODUCTS

The number appearing in each column is the beginning film frame number for that category.

PLEASE

all six categories for a single TQM
system are essentially linked.

- LINE CHANGES PROPOSED BY USAMC

[illegible]

APPENDIX 4

FSC CODE: 7947
FACILITY: ALLIED RESEARCH ASSOCIATES INCORPORATED
ATLANTA ROAD
CORCORAN, MASSACHUSETTS

STANDARDIZATION OF POSTING-METHOD

COORDINATOR: E. P. SIEGEL
DIRECTOR OF CONTRACTS
PHONE - 617-369-9000

ORIGINAL REGISTRATION: BOSTON PROBUCMENT DISTRICT (1959)

QUALIFICATIONS REPORTED BY ME FROM 5-8-3, dated June 14, 1945

PRIMARY QUALIFICATION AGENCY: ARMY MATERIALS RESEARCH AGENCY

ADDITIONAL REGISTRATIONS:

ANGL DE ARCT ELECTRONICS COMPANY
ANGL DE ARCT MISSILE COMPANY
ANGLIN DE ARCT AVIATION COMPANY
ANGLIN DE ARCT AVIATION MISSILE COMPANY
ANGLIN DE ARCT MOBILITY EQUIPMENT COMPANY
ANGLIN DE ARCT MOBILE EQUIPMENT COMPANY
ANGLIN DE ARCT POSITIONING COMPANY
ANGLIN DE ARCT WEAPONRY COMPANY
ANGLIN DE ARCT TEST & EVALUATION COMPANY

78 C Mfg. Code

F/N 6100

07647

APPENDIX 4.

Not Valid Copy

LATEST VALID POLICY AGREEMENT

A-4-4

2

OFFICE CODE
F. N. 000

NOT FOR RELEASE OF QUALITATIVE DEVELOPMENT RESEARCH AND INFORMATION

1. Report to all written statements of qualitative development research (including, however, related documents, furnished to the undersigned by the Ordnance Corps under the terms of this agreement, it is

The documents furnished are to remain the property of the United States.

The document may be returned to the Ordnance Corps by the undersigned.

The Ordnance Corps may recall the documents at any time.

The documents will not be disseminated outside of recipient without written permission of the Ordnance Corps, Department of Defense.

The undersigned shall safeguard all classified documents and shall maintain a system of security controls within its organization in accordance with the requirements of (1) The Department of Defense Security Policy (DOD 5400.1), (2) the Armed Forces Industrial Security Manual (AFIS 100-10), dated 21 September 1956, and (3) any regulations of the Ordnance Corps which may be issued by the Ordnance Corps as authorized by the

The documents furnished are not to be considered as a request for a commitment on the part of the Government that a contract may be awarded to the undersigned for the purpose of the development of a project, nor shall they be used as a basis of a claim against the Government. The furnishing of these documents by the Government shall be in no way to obligate the undersigned to furnish to the Government any information, research, or product, or to provide any other service or to perform any other work for the Government.

The documents are furnished to assist the undersigned organization in the development of a project which may result in the development of a new product or service.

With respect to each document or related group of documents furnished to the undersigned, the undersigned organization will maintain a system of security controls within 90 days after receipt of such documents and shall indicate whether the organization believes it was useful in the development of a project. This report may include any information, research, or product, or any other service or work performed by the undersigned organization which the organization desires to be considered for possible use by the Government.

F. N. 000 Code
07647

F. N. 0102

F. N. 0103

07647

APPENDIX 4

1. The undersigned is required to provide the undersigned organization with the information requested in this report, in accordance with the terms of this agreement, or the undersigned will permit the organization to deny submission of this report.

2. The undersigned is required to provide the undersigned organization with the information requested in this report, in accordance with the terms of this agreement, or the undersigned will permit the organization to deny submission of this report.

3. The undersigned is required to provide the undersigned organization with the information requested in this report, in accordance with the terms of this agreement, or the undersigned will permit the organization to deny submission of this report.

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5. The undersigned is required to provide the undersigned organization with the information requested in this report, in accordance with the terms of this agreement, or the undersigned will permit the organization to deny submission of this report.

558

Signature: Lawrence Levy, President

Lawrence Levy, President

And have authority to bind the said partnership

representative of the corporation (or the organizational

agent of the corporation) known as

Rob Associates, Inc.

And the undersigned organization with respect to this agreement

F. N. 0104

07647

3

CAPABILITIES AND
FIELDS OF INTEREST -
DOD R&D CAPABILITY
INDEX OR EQUIVALENT

F/N 0105

07147

F/N 0106

APPENDIX 4

RESEARCH AND DEVELOPMENT SOURCE IDENTIFICATION SHEET		JUNE 1964	
1. Name of research source: Allied Research Associates, Inc.		2. Source type: See, p. 3	
3. Address: Virginia Road, Concord, Mass.		4. City: Concord, Mass.	
5. State: Mass.		6. Zip: 01747	
7. Telephone: 110		8. Number of sources: 30	
9. Number of sources: 30		10. Number of sources: 30	
11. Name of research source: ARACON Graphics Co., a division of Allied Research Associates, Inc.			
12. Address: Virginia Road, Concord, Mass.			
13. City: Concord, Mass.			
14. State: Mass.			
15. Zip: 01747			
16. Telephone: 110			
17. Number of sources: 30			
18. Number of sources: 30			
19. Name of research source: Dr. George Gerard, and Dr. Arnold G.			
20. Address: Norman Buchbinder			
21. City: Concord, Mass.			
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200. Telephone: 110			

SECRET

SECRET

ALLIED RESEARCH ASSOCIATES, INC.

SECTION 33. MANAGEMENT

4
RESUMES AND
PROFILES -
KEY PERSONNEL

ADMINISTRATIVE MANAGEMENT

Accounting and Contracts
Assistant to the President
Development Planning
Personnel
Purchasing
Washington Office

Mr. William F. Burke
Mr. Leonard P. Grady
Mr. Alfred H. Saville
Mr. Gustave L. Oppermann
Mr. Martin D. Greenilla
Mr. Robert E. Jernon

• NOT GENERALLY DESIRED

• Comment

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APPENDIX 4

3. WILLIAM F. BURKE
MANAGER, ACCOUNTING AND CONTRACTS

Mr. William F. Burke, Manager and Comptroller of Allied Research Associates, Inc., is a graduate of the Bentley School of Accounting and Finance and holds the degree of Bachelor of Business Administration from Northeastern University. In addition, Mr. Burke is a graduate of the United States Air Force Pilot and Bombardier Schools. He served in the Eighth Air Force during World War II, and was awarded the Distinguished Flying Cross and Air Medal. Mr. Burke has been in the field of accounting and contract administration for the past eleven years. As an accountant and auditor for the Massachusetts Institute of Technology, he performed field work for the Air Force and negotiated overhead rates with subcontractors performing work for the Massachusetts Institute of Technology under government prime contracts. In conjunction with his studies, he performed the audit of Direct Charges as applied to the various subcontractors. He has also performed audits of private capitalistic enterprises with reference to their financial statements and administrative matters. Later, Mr. Burke was appointed Contract Administrator at the Massachusetts Institute of Technology. He was subsequently promoted to Comptroller in May of 1946 and was subsequently promoted to Comptroller of Allied Research Associates, Inc.

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LEONARD P. GRADY
ASSISTANT TO THE PRESIDENT

Mr. Leonard P. Grady, Assistant to the President, has the primary responsibility of assisting the President of Allied Research Associates, Inc., by performing necessary staff work in technical and administrative matters. These duties are, in general, quite varied but are consistent with the normal functions of the Office of the President. Some of these activities include preparation of preliminary reports, preparation of briefing material for Board of Directors' meetings, planning coordination of Company activities in professional society meetings and technical conventions, and coordination of in-house reports on the progress of current research and development programs in the Company.

Prior to his appointment to this position, Mr. Grady participated as a Staff Engineer in several varied studies at Allied Research, including two programs of a research and development nature for the U. S. Air Force—one was concerned with the design, wind tunnel tests, flight tests and analysis of a two-stage parachute system for a wind-measuring missile, and one with vulnerability of various aircraft which are subjected to the effects of a nuclear explosion. His other work included the analysis of a stabilization gyro for a small glider and the design of a number of missile recovery systems.

Mr. Grady was graduated from Boston College with the degree of Bachelor of Science in Physics. As a graduate student he has pursued advanced studies in physics at the University of Delaware and presently is a member of the physics graduate program at Northeastern University.

After graduation from Boston College, Mr. Grady joined the Bellini Research Laboratories at Aberdeen Proving Grounds as a Physicist. In this capacity he worked in the Shock Tube Section and conducted programs concerned with the thermal and blast effects on pitot-static and models of bombproof shelters. His studies of the emission of shock waves from the open end of a cylindrical tube resulted in establishing a simulation of certain aspects of a free-air explosion. Following this, Mr. Grady was employed by Bellini, Inc., of Falls Church, Virginia, where he became a Senior Engineer in the Flight Physics Division. In this position, he directed the design and construction of a high speed wind tunnel for the simulation of flight and system data into electro-mechanical systems for aircraft simulation. This involved the synthesis of the equations of motion for each part and the design of systems to simulate the Radar, Radio Aids, Flight Control and other functions of the respective aircraft.

Mr. Grady is a Member of the Institute of the Aeronautical Sciences, the American Physical Society and the American Institute of Physics.

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DR. PHILIP GOODMAN

Dr. Philip Goodman, Senior Scientist, is a member of the staff of the Materials Department and is presently engaged in studies of the relationship between time-dependent mechanical properties of materials and their molecular structure. These studies include both relaxation phenomena and steady-state flow behavior of polymers and semi-crystalline systems. Other related or subsidiary areas of activity are concerned with the temperature dependence of dynamic moduli and with the behavior of highly reactive, high temperature, molecular species.

Dr. Goodman received a Bachelor of Arts Degree from New York University in 1931. After serving with the Air Corps during World War II, during part of which time he was an instructor in Chemistry, he attended the University of Chicago where he received a Master of Science degree. Subsequent academic training was undertaken at the Ohio State University where he received a Doctor of Philosophy degree in 1942. He has held positions of research fellowships as well as teaching assistantships. His thesis was concerned with the structure of polyelectrolyte molecules in solution. A Doctor of Philosophy degree in physical chemistry was awarded in 1952.

Upon graduation, Dr. Goodman joined the staff of the National Bureau of Standards where he was a project leader doing research on the rheological properties, molecular structure and kinetics of mechanical degradation of synthetic polymers. He later moved to the Laboratory of the U. S. Naval Research, where he was head of the Structure and Properties Section. His research interests were concerned with the relationship of molecular structure and semi-crystallinity to relaxation processes and flow behavior of solution esters.

In 1955, Dr. Goodman joined the Corning Glass Works where he supervised a group of polymer research concerned with a wide variety of properties of plastic glasses and elastomers. These included studies of viscoelastic behavior of glasses in their transition region, volume properties of glasses at high temperatures, solid-state physical and chemical changes, phase transformations occurring in semi-crystalline glasses and influence of crystalline inclusions upon the physical properties of an amorphous system.

Dr. Goodman has published several technical papers and, during his tenure at Corning Glass Works, lectured to several technical sessions of scientific societies. He is a member of the American Chemical Society, American Physical Society, Society of Plastics, and American Association for the Advancement of Science.

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<u>Contract Description</u>	<u>Year Awarded</u>	<u>Client</u>
Need cone vulnerability studies	1956	General Electric
Mechanical design of special devices	1956	Air Force Research Bureau, Aeronautics Research Directorate
Vibration testing and design modification of 5 liter Dwyer flask	1956	Cambridge Corporation
Turboprop airplane evaluations	1956	Southwest Airways
Special instrumentation studies for recovery bodies	1956	General Electric Company
Formulation of structural design criteria for Air Force missiles	1957	Wright Air Development Division, Aircraft Laboratory
Weapons effects studies on aircraft including participation in full scale field tests at the Nevada and Pacific Proving Grounds; capability and feasibility of use of Air Force aircraft as carriers for nuclear weapons; vulnerability analyses of various representative targets to atomic warheads supplemented by full scale laboratory test program.	1957	Wright Air Development Division, Aircraft Laboratory
Plastic acmillator fabrication	1957	Edgerton, Germeshausen and Grier, Inc.
Theor isolator fabrication	1957	AC Spark Plug
Plastic acmillator fabrication	1957	University of California Radiation Laboratory
Vibration isolation and structural dynamic analysis of Astro-Techer with objective of reducing excessive loads.	1957	Kollern Instrument Corporation
Studies of employment of nuclear weapons in air defense	1957	Air Force Special Center Analysis Division Research Directorate
Analytical studies of hydrodynamics of water-rear missiles with emphasis on turbulence effects	1957	Office of Naval Research

<u>Contract Description</u>	<u>Year Awarded</u>	<u>Client</u>
Manufacture of plastic flares	1960	Edgerton, Germann & Grier, Incorporated
Research in methods of analysis for heat conduction and convection	1960	Air Force Office of Scientific Research
Design, development and fabrication of X-ray tubes	1960	IBM Electronics
Velocity measuring system study	1960	National Air Force Missile Development Center
Vanguard II satellite analysis	1961	National Aeronautics and Space Agency
Study of recognition and identification techniques	1960	Boeing Air Development Center
Cylinder Evaluation	1960	Bird-Johnson Company
Vulnerability of satellite system	1960	Wright Air Development Division
Hydrodynamic shock study	1960	Air Force Special Weapons Center
Plasma stimulation experiment	1960	Air Force Special Weapons Center

YEAR 1963

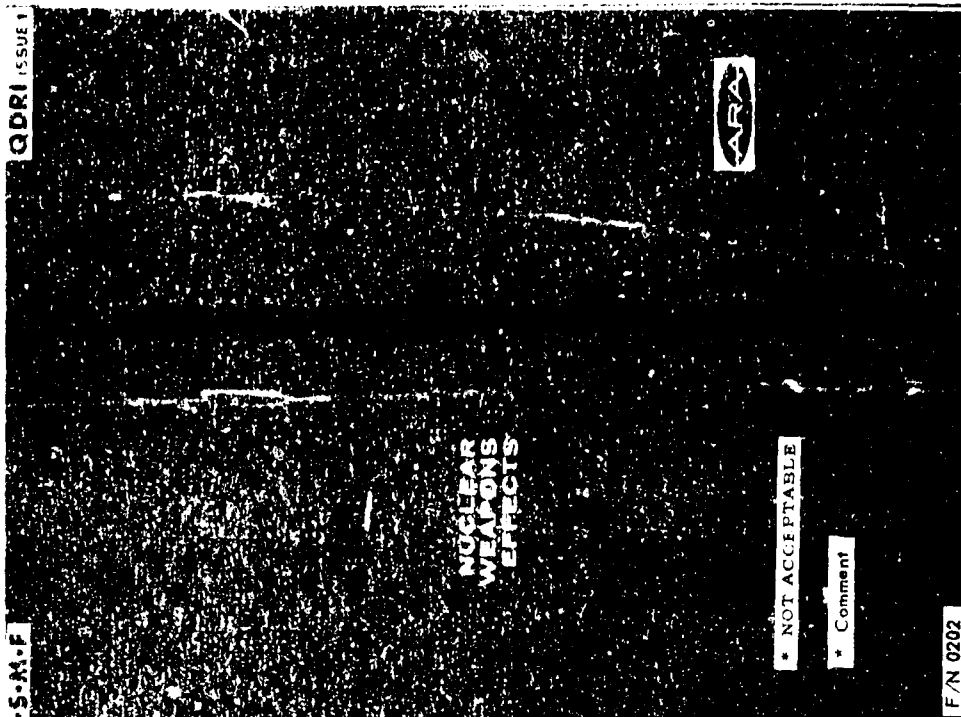
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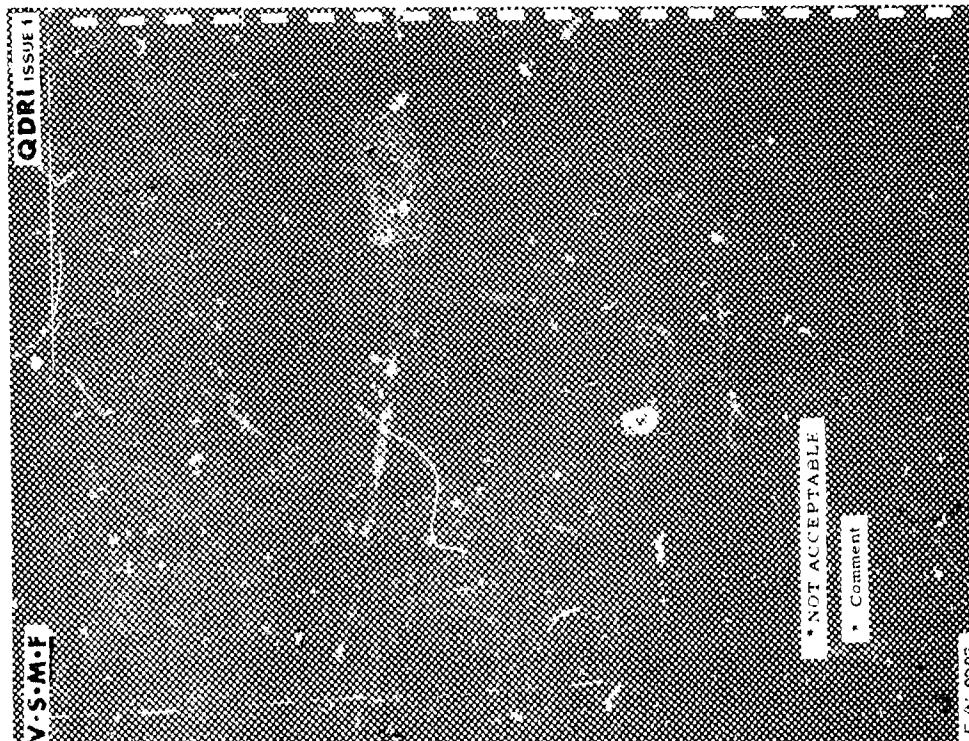
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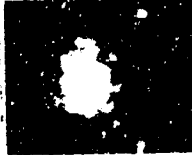
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APPENDIX 4



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EARLY RESULTS

capabilities...

Since 1961, programs sponsored principally by the U.S. Air Force, Army, and the Defense Atomic Support Agency at Allied Research Associates, Inc. have contributed to a fundamental understanding of the phenomena associated with the employment of nuclear weapons. Specific areas include theoretical definition of the environment resulting from a nuclear explosion, the response of materials and structures in this environment, and the planning and design of experiments to verify theory.

Allied Research Associates contributed to the theoretical derivation of the fallout environment, material ablation in a fireball, material response to x-radiation, and structural response to thermal and x-radiation and blast effects. Theoretical verification was obtained in both laboratory simulation experiments and full scale weapons tests when an ARA collaborated in the program planning, design, and performance.

Extensive simulation experiments in corroborate specially developed theory led to the definition of thermal damage criteria for strategic aircraft. Positioning of instrumented aircraft in Operations Upshot/Knothole, Castle, Redwing, and Tropic to moon - significant burst loads, including asymmetrical loadings, and correlative data analysis provided the basis for subsequent definition of strategic and tactical aircraft delivery capabilities and safe escape procedures.

Combining experimental data and theory, ARA performed numerous analyses of the vulnerability of U.S. and foreign aircraft; the derived data provided the basis for Air Force determination of warhead requirements for anti-aircraft missile weapon systems.

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APPENDIX 4

personnel...

• •	Harbert Becker President Engineering Services	Eng Sc.D
• • •	Ralph W. Collins Engineer	B.S.
• •	George Garand Vice President Research & Engineering	Eng Sc.D.
• • •	Harold V. Houshian Senior Engineer	B.S.
• • •	David C. Randall Chief Production Process Technology	S.M.
•	Peter E. Ryle Chief Manufacturing Technology	M.S.
• •	Robert W. Maltzman Senior Engineer	M.S.
• • •	Arthur C. S. Roberts Senior Engineer	S.B.
• •	Albert F. Sankley Senior Engineer	M.S.
• •	Paul Wang Senior Engineer	M.S.

• BELONGS IN SECTION 4

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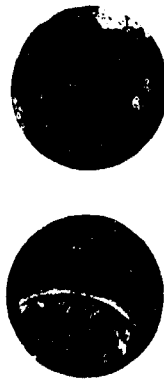
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EXAMINED AND



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APPENDIX 4

strobelasticity.....

STROBELASTICITY is the extension of stroboscopic lighting to a transient photoelastic event which can be repeated periodically analogous to the manner in which strobe lighting is used to "stop" periodic motion such as rotation of a shaft or oscillation of a piston. In each case, a short duration flash illuminates an instant in a cycle of a repeated event. In SE the repeated event is an impact stress wave which is generated, propagates, and finally decays within the period of repetition of the event. The illumination reveals the character of the transient photoelastic fringe pattern at the instant of the flash.

Except for the fact that a repeated transient event is being viewed directly, there is no essential difference in illumination principle between SE and stroboscopic analysis of rotating machinery. Frequency matching of strobe and impact produces a still picture at any chosen phase difference, while slight differences in frequency permit visualization of the event at a considerably reduced speed, the time scale of which is hypothetically capable of infinite resolution. Figures 1 through 5 reveal sequences of views obtained in representative photoelastic models during propagation of impact stress waves.

SE provides considerable simplification in equipment over other dynamic photoelastic procedures, which utilize high speed cameras and special light sources and which require the use of photography because they do not provide the image visualization available with SE. Furthermore, fringe sharpness is frequently lost, and the exposure intervals may be too large to obtain continuous visualization of the moving wave thereby requiring repeated tests to cover the event properly. As a result, considerable time may be expended on study of a single problem.

FLEXIBILITY

One of the major features of SE is the fact that the impact event can be viewed directly by the investigator who thereby has complete control of the particular experiment at all times, as may be seen from the typical experimental arrangement in Figure 6. Furthermore, the clarity of the fringes is excellent permitting direct measurement of fringe order at any location at any time. These features permit operation of an impact investigation in much the same manner and employing basically the same techniques as in static photoelasticity.

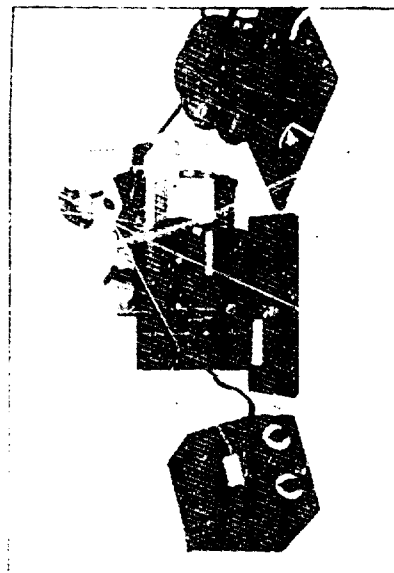


FIGURE 6. TYPICAL EXPERIMENTAL ARRANGEMENT

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Because of these features, photography is unnecessary in contrast to all other methods of studying stress waves. However, photography presents no problem since a still picture may be obtained exactly as in static loading (in which the shutter is permitted to remain open long enough for a proper exposure) merely by stopping the motion of the event by synchronizing both flash and impact at the desired phase. Figure 7 reveals a one second exposure made at a flash frequency of 60 cps, which consequently involved 60 successive flashes while the shutter was open. The sharpness of the fringes reveals the reliability of this procedure.

Motion picture recording requires a camera with accurate speed control. Otherwise, no photography problem exists in this case either, as may be seen in the sequences of Figures 1 through 5. Figure 1, for example, was obtained with the camera framing rate in synchronization with the strobe at 58 frames per second.



Figure 7 Impact stress photograph - taken at 1 second exposure at 60 cps (60 frames per second)

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ATMOSPHERIC PHYSICS, METEOROLOGY AND SATELLITE METEOROLOGY

Under Contract No. AF 19(604)-1509 with the Air Force Research Division, the Company has conducted investigations on the simulation of the atmosphere with respect to its radiative transport characteristics. The theoretical relations governing the distribution of radiant energy in the scattering and absorbing atmosphere with complex boundaries have been related to the measurable optical parameters of available laboratory materials. Besides carrying out reflection, transmission and absorption measurements, this program of research required studies on the light scattering properties of colloidal systems with respect to the magnitudes and angular directional properties of the scattered light. Studies and analysis of the noise problems associated with quantitative determinations of optical intensities formed a substantial portion of the work. The research culminated in the construction of a practicable prototype analog computer which could determine the intensity patterns of thermal radiation for a variety of atmospheric situations.

...

Allied Research engages in the development of atmospheric and meteorological instrumentation. The Company, under a sub contract with AFRL, is responsible for the design, development and prototype construction of airborne geophysical and atmospheric instruments, including the installation of such instruments on various aircraft, rockets and USAF aircraft. Under this contract, Allied Research has designed and constructed a truth sky photometer, which is a radiation measuring device, mounted on a rocket, for use in the upper atmosphere. In addition, Allied Research has designed and constructed a device for use in the lower atmosphere. This task included not only the design of the sensing device, but also the installation design for various types of aircraft. Another device designed under this contract was a mechanism for injecting crystalline material into the exhaust of a turbojet for the purpose of suppressing the formation of crystals. This mechanism was designed for installation in the F-64 aircraft and flight tests are currently being performed by the Air Force.

...

A recently completed task was the design of modifications to the nose portion of an Aerobee rocket used in high altitude sounding tests for the detection of micrometeorites. In the operation of this sounding device, the nose cone is perforated by explosive means after the rocket reaches altitude. Immediately thereafter, a spring-loaded tube used for collecting the micrometeorite dust extends into the rocket. The forward portion of the rocket also contains microphones which record the impingement of the micrometeorite particles.

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Allied Research also completed a program for the Air Force Research Division, in which the effects of heat and leg modification and dispersal, and the effects of heat and leg modification on the performance of man in a thermally dry flying environment were studied. This research and has been in successful operation for some time, conducted by Allied Research, and has been in successful operation for some time, conducted by Allied Research, and has been in successful operation for some time, conducted by Allied Research.

Another phase of this contract was carried out in conjunction with the Blue Hills Weather Observatory dealing with research on weather radar. Detailed analyses were made of the meteorological significance of various types of radar returns and critical evaluations were performed of advanced radar display techniques. Field studies were also made on radar returns from lightning and "angel" using special display methods evolved for this purpose.

Under Contract AF 19(604)-1093 to the Air Force Research Division, Allied Research is conducting a evaluation study of some sounding instruments. These instruments, intended for use in measuring some parameters in the upper atmosphere, are being calibrated, tested, and evaluated in the instrumentation Laboratory of Allied Research. Flight tests of these instruments have been completed.

Under Contract AF 1(604)-180 with the Air Force Research Division, Allied Research is investigating methods of very short-range forecasting over smaller areas. A forecasting experiment is being designed to critically evaluate the utility of weather radar in short-range terminal forecasting.

Under Contract No. AF 19(600-150) with the Air Force Research Division, Allied Research has undertaken the development to provide for immediate operational use of meteorological observations which will be made from the projected TiN-8 satellite. The TiN-8 meteorological satellite will carry television-type cameras through which images of cloud systems in the visible spectrum will be obtained. When properly interpreted, these images will provide information which will be of great value to the meteorological community as well as to the Armed Forces. As with other meteorological observations, these images are of operational value for only a very few hours after the observations are made. Necessary data storage aboard the satellite will introduce some delay in the transmission of the images. However, the information which is available can be made available to the data acquisition stations on the ground in a usable form as quickly as possible. This transmitted information can be processed and analyzed in a manner which will permit the meteorological research will perform just such a function. Rapid abstraction of pertinent meteorological information from the cloud images will be made possible, thereby permitting

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5. AUTHOR(S) (Last name, first name, initial) PEIRCE, James G.		
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11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY U. S. Army Materiel Command Washington, D. C.
13. ABSTRACT Microfilming of QDRI records was proposed in order to make total QDRI registration data more accessible to all QDRI offices, create uniform Army-wide QDRI records, reduce volume of QDRI files, limit data requirements on the QDRI data bank (RODATA), and provide faster and more accurate updating of industrial R&D catalog information. The VSMF System of Information Handling Services, Englewood, Colo. was selected as a promising possibility. This report outlines the results obtained from a test using Boston Procurement District files, and contains recommendations for expansion to an Army-wide standard operating system. This activity is considered as a part of the Army's scientific & technical information program.		

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Data retrieval Information handling Microfilming processes Qualitative development requirements Research and development source lists Scientific and technical information R&D capability index						

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1 December 1969

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