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NONDESTRUCTIVE INSPECTION CAREER LADDER AFSC 427X2.(U)
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9 OCCUPATIONAL SURVEY REPORT. 2



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6 NONDESTRUCTIVE INSPECTION CAREER LADDER

AFSC 427X2

AFPT 90-427-386

11 SEPT 1979

OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
RANDOLPH AFB TEXAS 78148

12/55

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PREFACE

↓ This report presents the results of a detailed Air Force Occupational Survey of the Nondestructive Inspection Specialty (AFSCs 42732, 42752, and 42772). The project was directed by USAF Program Technical Training, Volume 2, dated January 1978. Authority for conducting occupational surveys is contained in AFR 35-2. ↗

The survey instrument was developed by Second Lieutenant Robert L. Landry, Inventory Development Specialist. Captain William E. Griffith, Occupational Survey Analyst, analyzed the survey data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Survey Branch, USAF Occupational Measurement Center, Randolph AFB TX 78148.

The occupational survey program within the Air Force has been in existence since 1956 when initial research was undertaken by the Air Force Human Resources Laboratory to develop the methodology for conducting occupational surveys. By 1967, an operational survey program was established within Air Training Command and surveys were produced annually on 12 enlisted ladders. In 1972, the program was expanded to produce occupational surveys on 51 career ladders annually.

Computer programs for analyzing the occupational data were designed by Dr Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Science Division, AFHRL.

Copies of this report are available to air staff sections, major commands, and other interested training and management personnel upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Randolph AFB TX 78148.

This report has been reviewed and is approved.

BILLY C. McMASTER, Col, USAF
Commander
USAF Occupational Measurement
Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement
Center

SUMMARY OF RESULTS

Results of a

1. Survey Coverage: The Nondestructive Inspection career ladder USAF Job Inventory ~~was administered during the period February through June 1979.~~ The survey results are based on the responses of 661 of the 810 total assigned or 82 percent of the total ladder population.)

2. Career Ladder Structure: The Nondestructive Inspection career ladder was found to be very homogeneous in terms of tasks performed. Job groups identified included Branch Supervisors, Administrators, NCOICs of the NDI Lab, General Inspection Personnel, and four specialized inspection groups. The groups were differentiated by the amount of time devoted to supervision and management tasks, and whether or not members performed the full range of nondestructive inspection methods.

3. DAFSC and AFMS Groups: As in most career ladders, job content was found to change as a function of time in service and increase in skill level. Through the fourth enlistment, the job performed by Nondestructive Inspection personnel was primarily technical in nature, with members spending a majority of their time on inspection related tasks. From the fifth enlistment on, members reported spending a majority of their time on supervision and management tasks. Three- and 5-skill level personnel performed primarily as technical workers, while 7-skill level personnel performed primarily as working supervisors.

4. MAJCOM Differences: Slight differences in job content were identified between personnel in various MAJCOMs. Overall, the tasks performed were very similar, but different MAJCOMs concentrated on different inspection methods due to types of aircraft inspected and the nature of the mission.

5. Career Ladder Documents: The specialty descriptions in AFR 39-1 contain statements of responsibility sufficiently broad to encompass all required tasks performed by 427X2 personnel. The STS 427X2 appeared to be complete in providing general training requirements. However, the STS referenced two tasks which were performed by a very small percentage of Nondestructive Inspection personnel. Further, some tasks performed by a majority of 427X2 personnel were not referenced in the STS. These tasks should be reviewed to determine whether changes in the STS are warranted.

OCCUPATIONAL SURVEY REPORT
NONDESTRUCTIVE INSPECTION CAREER LADDER
(AFSCs 42732, 42752, 42772, 42799, and CEM Code 42700)

INTRODUCTION

This occupational survey report was completed by the Occupational Survey Branch, USAF Occupational Measurement Center during September 1979. The study was requested by the Chanute Technical Training Center, Chanute AFB IL, to determine the effect of new techniques and new aircraft on the career ladder, which was last surveyed in May 1975.

Nondestructive Inspection personnel are responsible for testing metals for flaws and discontinuities in aircraft, missile, and aerospace ground equipment, determining appropriate test methods, and interpreting resultant flaw and discontinuity indications.

The specialty has remained relatively stable over time, originating as AFSC 536X0 in September 1966. It was changed to 531X5 in May 1975 and again in April 1977 to its present designation, 427X2. The major responsibilities and tasks have remained stable. Personnel generally enter the career ladder through attendance of the Nondestructive Inspection Specialist Course (C3ABR42732) at Chanute Technical Training Center.

SURVEY METHODOLOGY

Inventory Development

The data for this survey were collected using USAF Job Inventory AFPT 90-427-386, which was developed in part from the 1975 AFS 531X5 inventory. The tasks listed in the 1975 inventory were reviewed and revised after thorough research of specialty publications and directives. This process yielded a new tentative task list. The inventory developer then conducted personal interviews with 20 subject matter specialists at Chanute AFB IL, Dover AFB DE, Eglin AFB FL, Hurlburt AFB FL, and Randolph AFB TX, where the task lists were reviewed for accuracy and completeness. The result was a final inventory of 284 tasks grouped under 16 duty headings and a background section that included information about the respondent, such as grade, TAFMS, duty title, job interest, and inspection techniques employed.

Survey Administration

During the period February through June 1979, consolidated base personnel offices in operational units worldwide administered the inventory booklets to personnel holding the Nondestructive Inspection DAFSCs. These personnel were selected from a computer generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL). Each individual who completed the inventory first completed an identification and biographical information section, then checked each task performed in their current job.

After checking all tasks performed, each respondent then rated each of these tasks on a nine-point scale showing a relative time spent on that task as compared to all other tasks checked. The ratings ranged from one (very-small-amount time spent) through five (about-average time spent) to nine (very-large-amount time spent). To determine relative time spent for each task checked by a respondent, all a respondent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is then divided by the total task responses and the quotient multiplied by 100. This procedure provides a basis for comparing tasks not only in terms of percent members performing but also in terms of average percent time spent.

Survey Sample

Table 1 indicates the distribution, by MAJCOM, of assigned personnel in the career ladder as of January 1979. Also included is the distribution by major command of the respondents in the final survey sample.

The DAFSC distribution of the survey sample is listed in Table 2. Of the 661 Nondestructive Inspection personnel who responded to the survey, 576 held DAFSCs 42732, 42752, and 42772, representing 71 percent of the personnel in those DAFSCs. The survey sample also included 85 respondents who held DAFSC 42799 or CEM Code 42700. Table 3 lists the percentage of respondents by Total Active Federal Military Service (TAFMS) time. As the three tables illustrate, the MAJCOM, DAFSC, and TAFMS distributions indicate that the survey sample was adequate and representative of the 427X2 career ladder as a whole.

TABLE 1
COMMAND REPRESENTATION OF SURVEY SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
TAC	31%	29%
MAC	18%	19%
SAC	16%	16%
USAFE	13%	13%
ATC	8%	8%
PACAF	5%	5%
AFSC	4%	3%
ADCOM	3%	4%
AAC	1%	1%
AFLC	1%	1%
OTHER	*	1%
TOTAL	100%	100%

* INDICATES LESS THAN .5 PERCENT

TOTAL ASSIGNED - 810
TOTAL SAMPLED - 661
PERCENT SAMPLED - 82%

TABLE 2
DAFSC DISTRIBUTION OF SURVEY SAMPLE
(3-, 5-, 7-SKILL LEVELS)

<u>DAFSC</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
42732	13%	10%
42752	63%	59%
42772	24%	31%
OTHER	*	*

* 9-SKILL LEVEL PERSONNEL AND CEMs SUPERVISE WORKERS IN SIX CAREER LADDERS; THEREFORE SPECIFIC AUTHORIZATIONS ARE NOT AVAILABLE FOR EACH LADDER. THIRTEEN PERCENT OF THE FINAL SAMPLE INCLUDED TEN PERCENT IN DAFSC 42799 AND THREE PERCENT IN CEM CODE 42700.

TABLE 3
AFMS DISTRIBUTION OF SURVEY SAMPLE

<u>1-48 MOS TAFMS</u>	<u>49-96 MOS TAFMS</u>	<u>97-144 MOS TAFMS</u>	<u>145-192 MOS TAFMS</u>	<u>193-240 MOS TAFMS</u>	<u>241+ MOS TAFMS</u>
40%	15%	15%	10%	11%	9%

CAREER LADDER STRUCTURE

A key aspect of the USAF Occupational Analysis program is to examine the actual structure of career ladders--what people are doing in the field, rather than how official career field documents say they are organized. This analysis is made possible by the Comprehensive Occupational Data Analysis Programs (CODAP). CODAP consists of 40 programs which generate a number of statistical products used in the analysis of career ladders. A primary product used to analyze career ladders is a hierarchical clustering of all jobs based on the similarity of tasks performed and relative time spent. This process permits identification of the major types of work being performed in the occupation (career ladder) and is analyzed in terms of the job description and background data of each type of job. This information is then used to examine the accuracy and completeness of career ladder documents (AFR 39-1 specialty descriptions and specialty training standards) and to formulate an understanding of current utilization patterns.

The basic identifying group used in the hierarchical job structure is the Job Type. A job type is a group of individuals who perform many of the same tasks and spend similar amounts of time performing these tasks. A Cluster is a group of job types which have a substantial degree of similarity. Finally, there are often specialized jobs that are too dissimilar to be grouped into any cluster. These unique groups are labeled Independent Job Types.

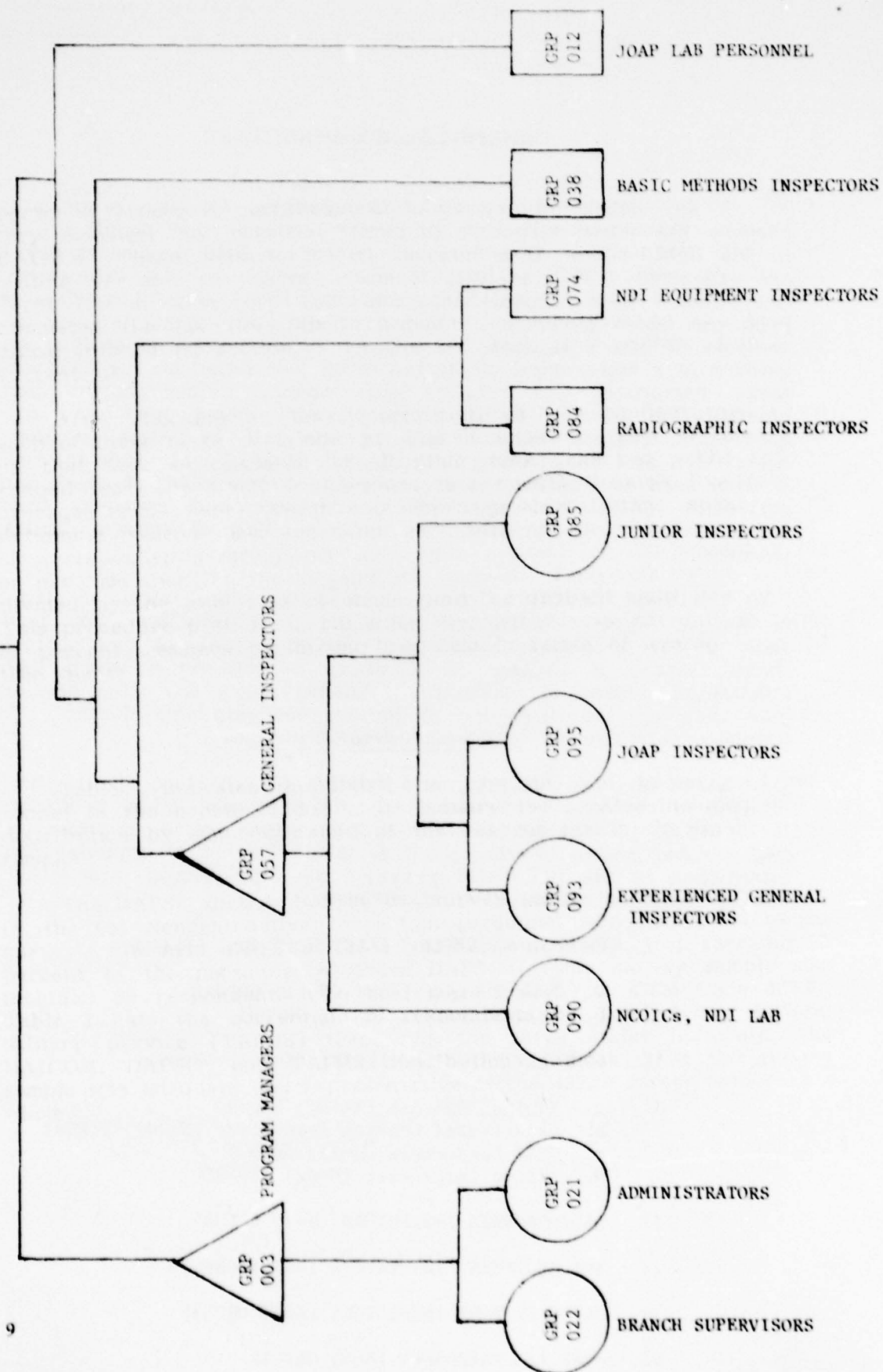
Based on task similarity and relative percent time spent, the best division of the jobs performed in the 427X2 career ladder is illustrated in Figure 1. These job clusters and job types are listed below. (The GRP number shown beside each title is a reference to computer printed information in the EXTRACT provided as supplemental information for use by classification and training officials.)

- I. PROGRAM MANAGEMENT CLUSTER (N=106) GRP003
 - a. Branch Supervisors (N=71) GRP022
 - b. Administrators (N=16) GRP021
- II. GENERAL INSPECTOR CLUSTER (N=501) GRP057
 - a. NCOICs, NDI Lab (N=107) GRP090
 - b. Experienced General Inspectors (N=302) GRP093
 - c. JOAP Inspectors (N=21) GRP095
 - d. Junior Inspectors (N=62) GRP085
- III. RADIOGRAPHIC INSPECTORS (N=7) GRP084
- IV. NDI EQUIPMENT INSPECTORS (N=10) GRP074
- V. BASIC METHODS INSPECTORS (N=9) GRP038
- VI. JOAP LAB PERSONNEL (N=9) GRP012

FIGURE 1

CAREER LADDER STRUCTURE, NONDESTRUCTIVE INSPECTION (427X2)

TOTAL SAMPLE, N=661



Ninety-seven percent of the NDI personnel surveyed were included in the job groups identified. The remaining three percent performed jobs so unique that they could not be included in the groups identified. For example, two small groups of Technical Training School Instructors were identified, one calling themselves Instructors and the other identifying themselves as Instructor Supervisors. Other heterogeneous job titles included Industrial Radiographer, Corrosion Analysis Surveyor, Mobility NCO, and NCOIC Technical Administration.

Group Descriptions

I. PROGRAM MANAGEMENT CLUSTER (GRP003). The members of this job cluster, among the most senior in the sample, were identified by their concentration on supervision, management, administrative, and training tasks, to the exclusion of almost all technical inspection tasks. Members reported spending over 92 percent of their time on nontechnical tasks. Within the cluster, two job types were identified which differed in the degree to which technical tasks were performed.

Ia. Branch Supervisors (GRP022). The members of this job group were the most senior personnel identified. Incumbents averaged 17 years in the career field and were in paygrade E-8. The Branch Supervisors reported spending 97 percent of their time on management, supervision, training, and administrative tasks. Performance of technical tasks was extremely limited, accounting for less than three percent of their time. Those technically oriented tasks performed dealt primarily with maintaining facilities and equipment and performing pre-inspection or general NDI functions, such as referencing technical data or selecting appropriate inspection methods.

The tasks commonly performed were those required to superintend the operation of Component Repair, Structural Repair, Fabrication, or Accessory Maintenance Branches. These tasks included writing and reviewing reports, correspondence, and APRs; counselling and supervising personnel; evaluating budgeting requirements, safety programs, suggestions, and compliance with work standards; and establishing organizational policies and procedures (see Table 1, Appendix A).

Expressed job satisfaction among Branch Supervisors was high. Over 90 percent found their job interesting, while 96 percent felt that their talents and training were utilized fairly well or better.

Ib. Administrators (GRP021). Compared to Branch Supervisors, members of this group spent more of their time on administrative and training tasks. Where Branch Supervisors reported spending 13 percent of their time on these two duties, Administrators reported spending over one-third of their time on them. For example, the conduct of OJT consumed a notable amount of the Administrators' time. Tasks such as evaluating OJT trainers and trainees; directing or implementing training programs; maintaining training records, charts,

and graphs; and counselling trainees on their progress were performed by a majority of Administrators. Administrators also reported spending over 20 percent of their time on such tasks as maintaining various files, registers, forms, and technical library files.

Unlike the Branch Supervisors, a majority of Administrators performed many technical inspection tasks. Group members, for example, reported performing such difficult tasks as interpreting radiographic, liquid penetrant, ultrasonic, magnetic particle, and eddy current indications. Incumbents also performed a variety of other technical inspection tasks, although they reported spending less time on them than workers in the General Inspector job cluster (GRP057).

II. GENERAL INSPECTOR CLUSTER (GRP057). The members of this large job cluster, comprising 76 percent of the sample, reported performing jobs very different from the Program Management cluster and the four independent job types. While other groups were specialized or limited in scope, General Inspector personnel performed the full range of technical NDI inspection tasks. Incumbents reported high performance of radiographic, liquid penetrant, magnetic particle, ultrasonic, and eddy current inspection tasks. Just over three-quarters reported performing JOAP analysis tasks while half reported performing several bond testing tasks.

Within the job cluster, four job types were identified: a group of supervisory technicians, a group of full range inspectors who additionally specialized in JOAP analysis, and two general NDI groups differing in the number of tasks performed and experience level.

IIa. NCOICs NDI LAB (GRP090). Members of this large group (N=107) performed a combination of supervisory, management, training, and administrative tasks in addition to difficult technical NDI inspection tasks. Forty percent of group members' time was spent on nontechnical tasks. However, some of these supervisory and management tasks were technically oriented, such as planning and scheduling work assignments, developing and improving work methods, directing maintenance or utilization of equipment, and inventorying equipment, tools, and supplies. Additionally, group members reported spending over half of their time on inspection related tasks. The inspection tasks most performed involved identifying and interpreting indications resulting from the various inspection methods, tasks which were perceived by technicians as being difficult. Because of the unique combination of many nontechnical and difficult inspection tasks, the job performed by NCOICs, NDI Lab was rated the most difficult of any group identified in the sample (see Table 21).

NCOICs reported high job satisfaction, with 90 percent finding their job interesting and an equal percentage reporting that their talents and training were utilized fairly well or better. Seventy-two percent indicated that they intended to reenlist (see Table 5).

IIb. Experienced General Inspectors (GRP093). Representing 46 percent of the total sample, this job group performed what could be described as the general NDI job. Members performed an average of 138 tasks, including the full range of NDI inspection tasks. Liquid penetrant, magnetic particle, radiographic, and eddy current inspection tasks were among the most time consuming tasks performed.

The group was composed on the average of 5-skill level specialists in paygrade E-4 and consequently spent much less time on supervising, management, and training tasks than did the NCOICs, NDI Lab. Relative to the Junior Inspectors (GRP085), Experienced General Inspectors devoted less time to magnetic particle and liquid penetrant tasks, and more to maintenance and inspection of NDI equipment (see Table IV, Appendix A).

An interesting relationship between job satisfaction indices and reenlistment intentions was identified in this job group. Expressed job satisfaction was high. Over 85 percent reported their job interesting, their talents well utilized, and their training utilized fairly well or better. However, only 49 percent expressed intention to reenlist.

IIc. JOAP INSPECTORS (GRP095). While members of this group reported performing the full range of technical NDI inspection tasks, they specialized in performing Joint Oil Analysis Program (JOAP) tasks. The 14 most time consuming tasks dealt with JOAP trend analysis, completion of associated administrative functions, and maintenance and inspection of JOAP equipment. Group members also performed all other inspection methods, but reported spending less time on some of them. For example, compared to the Experienced General Inspectors (GRP093), members spent one-third the relative time on radiographic inspection tasks and one-half the relative time on ultrasonic inspection tasks.

Expressed job satisfaction for JOAP Inspectors was high. Seventy-six percent found their job interesting, while 81 percent felt their talents well utilized. Eighty-six percent felt their training was utilized fairly well or better, with 81 percent expressing an intention to reenlist.

IId. Junior Inspectors (GRP085). The members of this job group were more junior than other 427X2s in the General Inspector job cluster (GRP057). Members' average grade was E-3 and 74 percent were in their first enlistment (1-48 months TAFMS), with 3- and 5-skill level personnel accounting for 94 percent of the group. The tasks performed reflected their junior status. While members performed the full range of inspection tasks, less difficult tasks accounted for a large share of their time. Liquid penetrant and magnetic particle inspection tasks accounted for over one-third of members' time. Additionally, compared to Experienced General Inspectors (GRP093), the Junior Inspectors performed fewer tasks dealing with maintenance and inspection of NDI equipment. As a result, the job performed by this group was rated the least difficult among Inspection groups (see Table 21). Table VI, Appendix A lists representative tasks for group members.

Like the Experienced General Inspectors (GRP093), Junior Inspectors expressed an interesting relationship between job satisfaction and reenlistment intentions. While 74 percent stated that they found their job interesting, 82 percent found their talents well utilized, and 93 percent felt their training well utilized, less than half expressed an intention of reenlisting. This may be a function of the fact that 74 percent of group members were in their first enlistment.

Independent Job Types

Members of the four independent job types performed less than the full range of the technical NDI job. One of the groups, the JOAP Lab Personnel (GRP012) specialized on their particular inspection method and devoted almost no time to other methods. The other three groups spent much of their time on two or three methods, and devoted much less time to other inspection methods.

In addition to performing less than the full range of NDI inspection and technical tasks, each job type was distinguished by a MAJCOM distribution differing markedly from the total sample distribution. Three MAJCOMS, TAC, SAC, and MAC, comprised 83 percent of the independent job types but only 63 percent of the total sample.

III. RADIOGRAPHIC INSPECTORS (GRP084). Unlike any other group identified, much of this groups' time was spent on radiographic setup, operation, identification, and interpretation tasks. In addition to radiographic inspection, magnetic particle and liquid penetrant inspection tasks consumed much of members time. On the other hand, group members spent little time on spectrographic oil analysis tasks or in performing pre-inspection functions or maintenance and inspection of NDI equipment. Members reported performing no quality control or pre-use tasks.

The Radiographic Inspectors were assigned primarily to two MAJCOMs, TAC (57 percent) and SAC (29 percent), and were the senior nonsupervisory NDI personnel identified. The average grade was E-5 and members averaged nine and one-half years TAFMS time (see Table 4).

IV. NDI EQUIPMENT INSPECTORS (GRP074). Group members performed tasks similar to the Junior Inspectors (GRP085); however, they were more limited in both number of tasks and range of inspections performed. Incumbents performed an average of 73 tasks, 18 tasks fewer than the Junior Inspectors. Group members also reported very limited performance of some NDI functions such as administrative, pre-use, pre-inspection, and bond testing tasks. Compared to other groups however, NDI Equipment Inspectors spent a large percentage (15 percent) of their time maintaining and inspecting NDI equipment (see Table VIII, Appendix A).

V. BASIC METHODS INSPECTORS (GRP038). Of all job groups identified in the career ladder, this group was the most junior and least experienced. The average paygrade of group members was E-3. The average time in the career field was 15 months, with 89 percent reporting having spent less than two years in the career field.

Members' junior status and lack of experience was reflected in the tasks performed. Almost half of incumbents' time (49 percent) was spent performing liquid penetrant and magnetic particle inspection tasks, most of which were rated low in difficulty. Much time was also spent on eddy current inspection tasks. However, beyond these three inspection methods, members' performance was limited compared to other groups. Basic Methods Inspectors reported less than average performance of ultrasonic, radiographic, JOAP, and bond testing inspection tasks. Those ultrasonic and radiographic inspection tasks performed were generally set-up and pre-inspection tasks.

Fifty-five percent of the Basic Methods Inspectors were assigned to SAC, with the remaining members in TAC, MAC, and ADCOM. All group members were assigned to CONUS installations. Not surprisingly, expressed job satisfaction for this very junior group was among the lowest in the career field. While 67 percent felt their job was interesting, and 89 percent felt their training well utilized, only 44 percent expressed the intention of reenlisting.

VI. JOAP LAB PERSONNEL (GRP012). This job type was the only one identified in which members performed primarily one inspection method. Over half (54 percent) of members' time was devoted to JOAP inspection and JOAP related administrative tasks. As Table X, Appendix A illustrates, 16 of the 20 tasks most performed by group members involved JOAP inspection, trend analysis, JOAP form preparation, and atomic emission equipment inspection and maintenance. Performance of all other inspection methods was extremely limited. Other tasks commonly performed included clean-up and facilities maintenance tasks, and some OJT monitoring tasks.

JOAP Lab Personnel were found principally in TAC (67 percent) with the remaining members assigned to AFSC, MAC, and PACAF.

Summary

The career ladder structure identified in this survey is very homogeneous. Of the 661 respondents, 501 or 76 percent were identified in the General Inspector cluster, where they performed the full range of the technical NDI job. Sharply differentiated from the General Inspectors, were the members of the Program Management cluster who performed more as supervisors and managers. The remaining career ladder incumbents were identified in four small limited scope job types, which, either because of lack of experience or extreme specialization, performed less than the full range of technical NDI tasks.

TABLE 4
SELECTED BACKGROUND DATA ON CAREER LADDER FUNCTIONAL GROUPS

	BRANCH SUPERVISORS	ADMIN-ISTRATORS	MOBILE NDI LAB	EXPERIENCED GENERAL INSPECTORS	JOAP INSPECTORS	JUNIOR INSPECTORS	RADIO-GRAPHIC INSPECTORS	NDI EQUIPMENT INSPECTORS	BASIC METHODS INSPECTORS	JOAP LAB PERSONNEL
NUMBER IN GROUP	71	16	107	302	21	62	7	10	9	9
PERCENT OF SAMPLE	11%	2%	16%	46%	3%	9%	1%	2%	1%	1%
PERCENT LOCATED IN CONUS	71%	74%	71%	73%	71%	83%	100%	90%	100%	89%
DAFSC DISTRIBUTION										
42732	-	-	1%	9%	5%	26%	-	20%	44%	22%
42752	-	-	14%	79%	71%	68%	71%	80%	56%	45%
42772	10%	69%	81%	12%	19%	6%	23%	-	-	33%
42796	76%	31%	1%	1%	-	-	-	-	-	-
OTHER	14%	-	3%	*	5%	-	-	-	-	-
AVERAGE GRADE										
AVERAGE TIME IN CAREER	7.7	6.6	5.7	3.8	4.1	3.3	5.0	3.4	3.2	4.2
AVERAGE TIME IN CAREER FIELD (MONTHS)	204	123	92	42	50	23	74	37	15	51
AVERAGE TIME IN SERVICE (MONTHS)	243	201	164	57	71	38	114	47	32	78
AVERAGE NUMBER OF PERSONS SUPERVISED										
AVERAGE NUMBER OF TASKS PERFORMED	7	5	4	1	1	**	3	**	0	2
JOB DIFFICULTY INDEX	11.43	14.17	17.58	13.72	13.92	9.11	9.02	7.98	4.88	7.91

* INDICATES LESS THAN .5 PERCENT

** INDICATES LESS THAN .5 PEOPLE SUPERVISED, BUT NOT ZERO

TABLE 5
COMPARISON OF JOB SATISFACTION INDICES BY CAREER LADDER FUNCTIONAL GROUPS
(PERCENT MEMBERS RESPONDING)

BRANCH SUPERVISORS	ADMIN- ISTRATORS	NCOICs	EXPERIENCED		JOAP INSPECTORS	JUNIOR INSPECTORS	RADIO- GRAPHIC INSPECTORS	NDI EQUIPMENT INSPECTORS	BASIC METHODS INSPECTORS	JOAP LAB PERSONNEL
			GENERAL INSPECTORS	INSPECTORS						
EXPRESSED JOB INTEREST:										
-	6	1	1	-	-	-	-	-	-	-
1	19	4	5	10	5	5	-	10	11	11
9	-	5	8	14	21	20	43	20	33	22
90	75	90	86	76	74	70	57	70	67	67
INTERESTING										
PERCEIVED UTILIZATION OF TALENTS:										
3	13	10	13	19	18	14	14	30	56	33
97	87	90	87	81	82	86	86	70	44	67
PERCEIVED UTILIZATION OF TRAINING:										
4	13	9	11	14	7	14	14	20	11	22
96	87	90	89	86	93	86	86	80	89	78
-	-	1	-	-	-	-	-	-	-	-
NOT REPORTED										
DO YOU PLAN TO REENLIST:										
38	44	23	48	19	51	57	57	50	56	33
61	44	72	49	81	47	43	43	50	44	56
1	12	5	3	-	2	-	-	-	-	11
NO OR PROBABLY NO										
YES OR PROBABLY YES										
NO RESPONSE										

COMPARISON OF DAFSC GROUPS

Duty AFSC groups were compared to determine what changes in tasks performed occurred as skill level increased. The skill level comparison is useful in determining the accuracy of the career ladder documents (AFR 39-1 Specialty Descriptions and the Specialty Training Standard), in reflecting what personnel are actually doing on the job.

Table 6 shows the relative time spent performing duties by DAFSC groups. The duties are of two types, technical and managerial. The technical duties include performing the basic methods of nondestructive inspection, performing quality control functions, and maintaining shop facilities. The managerial duties include organizing and planning, directing and implementing, inspecting and evaluating, training, and performing administrative functions.

Job content was found to change as members progressed in skill level. The time spent on supervision and management tasks increased with advancement in skill level. The personnel in DAFSC 42732, for example, spent only three percent of their time on supervision, management, and training tasks, while those in DAFSC 42772 spent nearly 29 percent of their time on these tasks.

DAFSC 42732. The job performed by 3-skill level personnel was almost totally technical. Apprentice NDI Specialists reported spending 90 percent of their time on technical tasks, with administrative tasks consuming seven percent and supervision, management, and training tasks accounting for only three percent. Of the technical tasks performed, those dealing with liquid penetrant and magnetic particle inspection involved the most time. Commonly performed tasks included applying and removing liquid penetrants and emulsifiers, identifying and interpreting liquid penetrant indications, and magnetizing, demagnetizing, and interpreting magnetic particle indications. Apprentices also reported performing many radiographic inspection tasks. However, more time was spent on less difficult tasks dealing with radiographic equipment setup than on more difficult identification and interpretation tasks (see Table 10).

Relative to 5-skill level personnel, apprentice NDI specialists spent less time on administrative tasks, on quality control and pre-use functions, and on certain radiographic inspection tasks. Table 7 lists tasks which best differentiate 3- and 5-skill level personnel.

DAFSC 42752. Over 90 percent of 5-skill level personnel were identified in the General Inspector job cluster (GRP057), where members perform a very technically oriented job. Incumbents reported an average of 86 percent of their time spent on technical tasks and they performed a wider range of these tasks than did apprentices. Compared to 3-skill level personnel, specialists spent more time on radiographic indication identification and interpretation tasks, and quality control,

pre-use, and administrative tasks. They also spent more time on supervision, management, and training tasks than apprentices, but spent much less time on these tasks in comparison to 7-skill level technicians (see Tables 7 and 8).

Tasks commonly performed by 5-skill level personnel included all inspection methods except bond testing. Magnetic particle, liquid penetrant, and radiographic inspection tasks were performed universally and accounted for 40 percent of members' time. Ultrasonic, eddy current, and spectrographic oil analysis tasks were also commonly performed but consumed less time (see Table 11).

DAFSC 42772. Technicians, while performing many supervisory, management, and training tasks in addition to technical tasks, were still primarily technically oriented. As Table 12 illustrates, the job performed by 7-skill level personnel was a combination of nontechnical supervision and training tasks and difficult inspection interpretation tasks. In addition, many technicians reported performing inspection setup and equipment operation tasks, although not to the same extent as 5-skill level personnel. The diversity of the technicians job was reflected in the large number of tasks performed, 157, which was more than any other DAFSC group. The unique combination of supervision, management, and training tasks with many difficult technical tasks resulted in the technicians' job being rated the most difficult of any DAFSC group.

As technically oriented supervisors, 7-skill level personnel were identified primarily in three job groups. Almost half of them were identified as NCOICs of the NDI Lab (GRP090). Additionally, technicians comprised 69 percent of the Administrator job type (GRP021) and 12 percent of the Experienced General Inspector job group (GRP093).

DAFSC 42799. Supervision, management, training and administrative tasks accounted for over 92 percent of the time spent by 9-skill level incumbents. Technical task performance was very limited among Fabrication Superintendents. Those few technical tasks performed were reported by a small percentage of respondents who spent little time on them. Instead, 9-skill level personnel performed a wide variety of nontechnical management, training, and administrative tasks associated with the superintending of NDI shops and maintenance branches.

Of the 69 incumbents in DAFSC 42799, 66 were identified in the Program Management job cluster (GRP003), where most were further isolated in the Branch Supervisor job type (GRP022). Several 9-skill level personnel were identified in the Administrator job type (GRP021) and a few were identified as NCOICs, NDI Lab (GRP090).

Summary

The nature of the NDI job changed as skill level increased. Both 3- and 5-skill level personnel performed primarily technical tasks, with those in DAFSC 42752 performing a wider range of inspection tasks. There was a major difference between 5- and 7-skill level personnel. Technicians (42772s) functioned as working supervisors, performing supervision, management, and training tasks not performed by lower skill level personnel, and some difficult technical tasks to a greater extent than the 3- and 5-skill level specialists.

TABLE 6
PERCENT TIME SPENT ON DUTIES BY DAFSC GROUPS

DUTY	TITLE	TOTAL 427X2 (N=661)	DAFSC 42732 (N=55)	DAFSC 42752 (N=343)	DAFSC 42772 (N=178)	DAFSC 42799 (N=69)	CEM CODE 42700 (N=10)
A	ORGANIZING AND PLANNING	5	1	1	6	21	27
B	DIRECTING AND IMPLEMENTING	8	1	2	11	34	38
C	INSPECTING AND EVALUATING	5	*	1	5	23	26
D	TRAINING	4	1	1	7	9	7
E	PERFORMING NONDESTRUCTIVE INSPECTION (NDI) ADMINISTRATIVE FUNCTIONS	9	7	8	13	5	1
F	PERFORMING PRE-INSPECTION OR GENERAL NDI FUNCTIONS	7	10	9	6	1	-
G	PERFORMING BOND TESTING FUNCTIONS	1	1	1	1	*	-
H	PERFORMING LIQUID PENETRANT INSPECTIONS	10	17	13	7	*	*
I	PERFORMING RADIOGRAPHIC INSPECTIONS	12	13	15	11	2	-
J	PERFORMING ULTRASONIC INSPECTIONS	7	8	9	6	1	-
K	PERFORMING MAGNETIC PARTICLE INSPECTIONS	10	15	13	8	*	-
L	PERFORMING EDDY CURRENT INSPECTIONS	4	6	6	3	*	-
M	PERFORMING MAINTENANCE AND INSPECTIONS OF NONDESTRUCTIVE INSPECTIONS EQUIPMENT	8	8	9	7	1	-
N	PERFORMING JOINT OIL ANALYSIS PROGRAM (JOAP) FUNCTIONS	5	5	6	4	*	-
O	PERFORMING QUALITY CONTROL OR PPE-USE FUNCTIONS	2	2	2	2	*	-
P	MAINTAINING FACILITIES AND EQUIPMENT	3	5	4	3	2	1
	TOTAL	100	100	100	100	100	100

* INDICATES LESS THAN .5 PERCENT

TABLE 7

TASKS WHICH BEST DIFFERENTIATE BETWEEN 3- AND 5-SKILL LEVEL NDI PERSONNEL
(PERCENT MEMBERS PERFORMING)

<u>TASK</u>	<u>TITLE</u>	<u>DAFSC 42732 (N=55)</u>	<u>DAFSC 42752 (N=343)</u>	<u>DIFFERENCE</u>
B38	SUPERVISE APPRENTICE NONDESTRUCTIVE INSPECTION (NDI) SPECIALISTS (AFSC 42732)	2	39	-37
E107	RECORD NDI DATA ON INDUSTRIAL RADIOGRAPHY UTILIZATION LOG FORMS (AFTO FORM 125)	35	66	-31
D63	CONDUCT OJT	3	33	-30
I176	POST RADIATION MONITORS	56	85	-29
B25	DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	18	44	-26
D67	DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	9	35	-26
B41	SUPERVISE NONDESTRUCTIVE INSPECTION SPECIALISTS (AFSC 42752)	2	27	-25
I167	DEVELOP RADIOGRAPHIC EXPOSURE TECHNIQUES WHEN TECHNICAL DATA IS NOT AVAILABLE	49	74	-25
B36	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	16	41	-25
E114	RECORD NDI DATA ON THE POCKET DOSIMETER RESULTS LOG FORMS (AFTO FORM 115)	31	55	-24
L231	PERFORM EDDY CURRENT THICKNESS MEASUREMENT INSPECTIONS	42	35	+ 7
F122	DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	95	92	+ 3
K206	APPLY MAGNETIC RUBBER	15	12	+ 3
N252	CONVERT PERCENTAGE OF ABSORPTION TO PARTS PER MILLION	29	26	+ 3
P283	REMOVE AND DISPOSE OF TRASH OR WASTE MATERIALS	93	90	+ 3

TABLE 8

TASKS WHICH BEST DIFFERENTIATE BETWEEN 5- AND 7-SKILL LEVEL NDI PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASK	TITLE	DAFSC 42752 (N=343)	DAFSC 42772 (N=178)	DIFFERENCE
C57	WRITE AIRMAN PERFORMANCE REPORTS (APR)	18	85	-67
B24	COUNSEL PERSONNEL ON PERSONAL PROBLEMS	23	86	-63
B23	COUNSEL PERSONNEL ON MILITARY RELATED PROBLEMS	16	78	-62
B41	SUPERVISE NONDESTRUCTIVE INSPECTION TECHNICIANS (AFSC 42752)	27	87	-60
A15	SCHEDULE LEAVES OR PASSES	6	66	-60
A9	PLAN OR SCHEDULE WORK ASSIGNMENTS	22	81	-59
B35	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	20	78	-58
B29	DIRECT RADIATION SAFETY PROGRAMS	6	61	-55
D66	COUNSEL TRAINEES ON TRAINING PROGRESS	18	72	-54
B28	DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT	26	80	-54
P283	REMOVE AND DISPOSE OF TRASH OR WASTE MATERIALS	90	56	+34
P279	MOP, WAX, OR POLISH FLOORS OR VACUUM RUGS OR CARPETS	93	60	+33
I173	PERFORM AUTOMATIC RADIOGRAPHIC FILM PROCESSING	71	49	+22
H148	APPLY PENETRANT TO MATERIALS	97	79	+18
K207	APPLY MAGNETIZING CURRENT TO MATERIALS	97	79	+18
K210	CHECK FOR DEMAGNETIZATION	97	79	+18
F132	PERFORM POST-CLEANING OF MATERIAL AFTER INSPECTIONS	92	75	+17
H147	APPLY EMULSIFIERS TO MATERIALS	95	78	+17
K208	APPLY WET MAGNETIC PARTICLES	96	79	+17
K215	OPERATE MAGNETIC PARTICLE EQUIPMENT	97	81	+16

TABLE 9

TASKS WHICH BEST DIFFERENTIATE BETWEEN 7- AND 9-SKILL LEVEL 427X2 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASK	TITLE	DAFSC 42772 (N=178)	DAFSC 42799 (N=69)	DIFFERENCE
K214	INTERPRET MAGNETIC PARTICLE INDICATIONS	84	6	+78
H160	SELECT PENETRANT DWELL TIMES	80	3	+77
K213	IDENTIFY MAGNETIC PARTICLE INDICATIONS	81	4	+77
H155	INTERPRET PENETRANT INDICATIONS	84	7	+77
H148	APPLY PENETRANT TO MATERIALS	79	3	+76
H157	REMOVE PENETRANT FROM MATERIALS	79	3	+76
K208	APPLY WET MAGNETIC PARTICLES	79	3	+76
K210	CHECK FOR DEMAGNETIZATION	79	3	+76
K211	DEMAGNETIZE MATERIALS	79	3	+76
L224	BALANCE EDDY CURRENT EQUIPMENT	79	3	+76
B40	SUPERVISE MILITARY PERSONNEL OTHER THAN AFSC 427X2	17	75	-58
B21	CONDUCT STAFF MEETINGS	19	65	-46
C46	EVALUATE BUDGETING OR FINANCIAL REQUIREMENTS	22	67	-45
C56	INVESTIGATE ACCIDENTS OR INCIDENTS	37	71	-34
A4	DRAFT BUDGET OR FINANCIAL REQUIREMENTS	29	59	-30
B30	DRAFT CORRESPONDENCE	62	90	-28
C49	EVALUATE INSPECTION REPORTS OR PROCEDURES	56	84	-28
B20	COMPLETE PERSONNEL ACTION REQUESTS	35	62	-27
C48	EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	48	74	-26
C55	EVALUATE SUGGESTIONS	42	68	-26

TABLE 10

REPRESENTATIVE TASKS PERFORMED BY APPRENTICE NDI SPECIALISTS
(DAFSC 42732, N=55)

TASKS	PERCENT MEMBERS PERFORMING
H148 APPLY PENETRANT TO MATERIALS	96
H157 REMOVE PENETRANT FROM MATERIALS	96
H153 IDENTIFY PENETRANT INDICATIONS	95
H155 INTERPRET PENETRANT INDICATIONS	95
K211 DEMAGNETIZE MATERIALS	95
K215 OPERATE MAGNETIC PARTICLE EQUIPMENT	95
K207 APPLY MAGNETIZING CURRENT TO MATERIALS	95
K210 CHECK FOR DEMAGNETIZATION	95
K213 IDENTIFY MAGNETIC PARTICLE INDICATIONS	95
F122 DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	95
P279 MOP, WAX, OR POLISH FLOORS OR VACUUM RUGS OR CARPETS	93
F132 PERFORM POST-CLEANING OF MATERIAL AFTER INSPECTIONS	93
P283 REMOVE AND DISPOSE OF TRASH OR WASTE MATERIALS	93
H160 SELECT PENETRANT DWELL TIMES	93
H154 INSPECT SURFACES FOR PENETRANT REMOVAL AFTER POST-CLEANING	93

TABLE 11

REPRESENTATIVE TASKS PERFORMED BY NDI SPECIALISTS
(DAFSC 42752, N=343)

TASKS	PERCENT MEMBERS PERFORMING
H148 APPLY PENETRANT TO MATERIALS	97
K215 OPERATE MAGNETIC PARTICLE EQUIPMENT	97
K207 APPLY MAGNETIZING CURRENT TO MATERIALS	97
H155 INTERPRET PENETRANT INDICATIONS	97
K210 CHECK FOR DEMAGNETIZATION	97
K208 APPLY WET MAGNETIC PARTICLES	96
K213 IDENTIFY MAGNETIC PARTICLE INDICATIONS	96
H153 IDENTIFY PENETRANT INDICATIONS	96
H157 REMOVE PENETRANT FROM MATERIALS	95
H156 REMOVE EMULSIFIERS FROM MATERIALS	95
H147 APPLY EMULSIFIERS TO MATERIALS	95
K214 INTERPRET MAGNETIC PARTICLE INDICATIONS	95
K211 DEMAGNETIZE MATERIALS	95
L224 BALANCE EDDY CURRENT EQUIPMENT	94
H154 INSPECT SURFACES FOR PENETRANT REMOVAL AFTER POST-CLEANING	94

TABLE 12
 REPRESENTATIVE TASKS PERFORMED BY NDI TECHNICIANS
 (DAFSC 42772, N=178)

TASKS	PERCENT MEMBERS PERFORMING
B41 SUPERVISE NONDESTRUCTIVE INSPECTION SPECIALISTS (AFSC 42752)	87
B24 COUNSEL PERSONNEL ON PERSONAL PROBLEMS	86
B25 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	85
C57 WRITE AIRMAN PERFORMANCE REPORTS (APR)	85
H155 INTERPRET PENETRANT INDICATIONS	84
K214 INTERPRET MAGNETIC PARTICLE INDICATIONS	84
I169 INTERPRET RADIOGRAPHIC INDICATIONS	83
D67 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	82
H153 IDENTIFY PENETRANT INDICATIONS	82
K213 IDENTIFY MAGNETIC PARTICLE INDICATIONS	81
A9 PLAN OR SCHEDULE WORK ASSIGNMENTS	81
F129 LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	81
F122 DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	81
L228 INTERPRET EDDY CURRENT INDICATIONS	80
B28 DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT	80

TABLE 13

REPRESENTATIVE TASKS PERFORMED BY FABRICATION SUPERINTENDENTS
(DAFSC 42799, N=69)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
B24	COUNSEL PERSONNEL ON PERSONAL PROBLEMS	94
B23	COUNSEL PERSONNEL ON MILITARY RELATED PROBLEMS	93
B30	DRAFT CORRESPONDENCE	90
C49	EVALUATE INSPECTION REPORTS OR PROCEDURES	84
A1	ASSIGN PERSONNEL TO DUTY POSITIONS	84
B35	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	83
A15	SCHEDULE LEAVES OR PASSES	83
A5	ESTABLISH ORGANIZATIONAL POLICIES, OFFICE INSTRUCTIONS (OI), OR STANDARD OPERATING PROCEDURES (SOP)	83
C57	WRITE AIRMAN PERFORMANCE REPORTS (APR)	80
A3	DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	77
B40	SUPERVISE MILITARY PERSONNEL OTHER THAN AFSC 427X2	75
C47	EVALUATE COMPLIANCE WITH WORK STANDARDS	74
C48	EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	74
A2	ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	74
B25	DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	72

ANALYSIS OF AFMS GROUPS

An analysis was also made across AFMS groups to determine the change in tasks performed as a function of Total Active Federal Military Service (TAFMS). As might be expected, NDI personnel with little AFMS time tended to spend more time on technical tasks while time spent performing supervision, management, and training tasks increased as TAFMS time increased (see Table 15).

Personnel in their first enlistment (1-48 months TAFMS) spent virtually all their time performing the technical duties, which included radiographic, magnetic particle, liquid penetrant, ultrasonic, eddy current, spectrographic analysis (JOAP), and bond testing inspection methods. High performance of these technical duties continued through the fourth enlistment (145-192 months TAFMS), where they still accounted for over 60 percent of members' time. The nature of tasks performed changed in the fifth enlistment (193-240 months TAFMS) however. In that enlistment group, supervision, management, training, and administrative tasks accounted for 61 percent of members' time, while technical tasks consumed just 39 percent.

First Job Analysis (1-24 Months TAFMS)

Although new to the NDI career field, most airmen in their first job assignment performed the full range of technical tasks. Incumbents reported employing all inspection methods and performed administrative, pre-inspection, and quality control functions (see Table 14). However, performance of the more difficult technical tasks was limited when compared to more experienced NDI personnel. First job airmen reported spending 30 percent of their time on liquid penetrant and magnetic particle inspection tasks, most of which are perceived (by NCOs who rated Task Difficulty) as being less difficult than other inspection tasks.

Compared to airmen with 25-48 months TAFMS, first job airmen reported spending less time on very difficult tasks, such as operating ultrasonic flaw detection equipment, identifying and interpreting ultrasonic flaw indications, and determining sources of metal wear or contamination. This is illustrated in Table 16 which lists a sampling of the tasks which best differentiate the job of 1-24 months airmen from those with 25-48 months TAFMS.

TABLE 14

REPRESENTATIVE TASKS PERFORMED BY 427X2 AIRMEN IN THEIR FIRST JOB ASSIGNMENT
(1-24 MONTHS AFMS)
(N=131)

TASK	TITLE	PERCENT MEMBERS PERFORMING
H148	APPLY PENETRANT TO MATERIALS	98
H157	REMOVE PENETRANT FROM MATERIALS	98
K215	OPERATE MAGNETIC PARTICLE EQUIPMENT	98
K207	APPLY MAGNETIZING CURRENT TO MATERIALS	98
H153	IDENTIFY PENETRANT INDICATIONS	97
K211	DEMAGNETIZE MATERIALS	97
K210	CHECK FOR DEMAGNETIZATION	97
H156	REMOVE EMULSIFIERS FROM MATERIALS	96
H147	APPLY EMULSIFIERS TO MATERIALS	96
H155	INTERPRET PENETRANT INDICATIONS	96
K208	APPLY WET MAGNETIC PARTICLES	96
H154	INSPECT SURFACES FOR PENETRANT REMOVAL AFTER POST-CLEANING	95
K213	IDENTIFY MAGNETIC PARTICLE INDICATIONS	95
P279	MOP, WAX, OR POLISH FLOORS OR VACUUM RUGS OR CARPETS	94
F132	PERFORM POST-CLEANING OF MATERIAL AFTER INSPECTIONS	94
F122	DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	94
P283	REMOVE AND DISPOSE OF TRASH OR WASTE MATERIALS	93
K214	INTERPRET MAGNETIC PARTICLE INDICATIONS	93
L227	IDENTIFY EDDY CURRENT INDICATIONS	93
H160	SELECT PENETRANT DWELL TIMES	92
L224	BALANCE EDDY CURRENT EQUIPMENT	92
K222	SELECT TYPE CURRENT TO USE FOR DEMAGNETIZATION	92
H149	APPLY WET DEVELOPER TO MATERIALS	92
K220	REMOVE WET MAGNETIC PARTICLES	92
H159	SELECT EMULSIFIER DWELL TIMES	91
K223	SELECT TYPE MAGNETISM TO USE FOR INSPECTIONS	91
L232	SELECT EDDY CURRENT PROBES AND EQUIPMENT	91
K216	PRE-SET AMPERAGE ON MAGNETIC PARTICLE INSPECTION EQUIPMENT	90

TABLE 15

PERCENT TIME SPENT ON DUTIES BY AFMS GROUPS

DUTY	TITLE	MONTHS TOTAL ACTIVE FEDERAL MILITARY SERVICE (TAFMS)						
		1-24 MONTHS (N=131)	1-48 MONTHS (N=264)	49-96 MONTHS (N=101)	97-144 MONTHS (N=96)	145-192 MONTHS (N=63)	193-240 MONTHS (N=76)	241+ MONTHS (N=60)
A	ORGANIZING AND PLANNING	*	1	2	4	7	13	19
B	DIRECTING AND IMPLEMENTING	1	1	5	7	11	21	30
C	INSPECTING AND EVALUATING	*	1	1	3	7	13	20
D	TRAINING	*	1	3	5	8	7	9
E	PERFORMING NONDESTRUCTIVE INSPECTION (NDI)							
	ADMINISTRATIVE FUNCTIONS	8	8	8	11	12	10	6
F	PERFORMING PRE-INSPECTION OR GENERAL NDI							
	FUNCTIONS	10	9	8	7	6	4	2
G	PERFORMING BOND TESTING FUNCTIONS	1	1	1	1	1	1	*
H	PERFORMING LIQUID PENETRANT INSPECTIONS	15	14	13	10	6	4	1
I	PERFORMING RADIOGRAPHIC INSPECTIONS	14	15	14	11	10	8	4
J	PERFORMING ULTRASONIC INSPECTIONS	9	9	8	7	6	3	2
K	PERFORMING MAGNETIC PARTICLE INSPECTIONS	14	13	12	10	7	5	1
L	PERFORMING EDDY CURRENT INSPECTIONS	6	6	6	4	3	2	1
M	PERFORMING MAINTENANCE AND INSPECTIONS OF							
	NONDESTRUCTIVE INSPECTIONS EQUIPMENT	9	9	8	9	7	4	2
N	PERFORMING JOINT OIL ANALYSIS PROGRAM (JOAP)							
	FUNCTIONS	7	6	5	6	4	2	*
O	PERFORMING QUALITY CONTROL OR PRE-USE FUNCTIONS	2	2	2	2	2	1	1
P	MAINTAINING FACILITIES AND EQUIPMENT	4	4	4	3	3	2	2
	TOTAL	100	100	100	100	100	100	100

* INDICATES LESS THAN .5 PERCENT

TABLE 16

COMPARISON OF PERFORMANCE OF DIFFICULT TASKS BY
1-24 MONTHS AFMS VS 25-48 MONTHS AFMS GROUPS*
(PERCENT MEMBERS PERFORMING)

TASK	TITLE	1-24 MONTHS AFMS (N=131)	25-48 MONTHS AFMS (N=133)	DIFFERENCE	TASK DIFFICULTY
J189	DEVELOP ULTRASONIC FLAW DETECTION TECHNIQUES	34	50	-16	7.08
J187	DETERMINE MODE OF TRANSMISSION, SIZE OF PART, AND FREQUENCY REQUIRED OF SELECTION OF TRANSDUCERS	60	75	-15	6.37
J188	DETERMINE TRANSDUCER'S ANGLE OF INCIDENCE AND RESOLUTION USING TEST STANDARDS	56	71	-15	6.59
J198	OPERATE ULTRASONIC FLAW DETECTION EQUIPMENT	76	87	-11	6.02
N253	DETERMINE SOURCES OF WEAR METALS OR CONTAMINATION	60	71	-11	6.47
J194	INTERPRET ULTRASONIC FLAW DETECTION INDICATIONS	70	81	-11	6.95
J192	IDENTIFY ULTRASONIC FLAW DETECTION INDICATIONS	73	83	-10	6.68
I169	INTERPRET RADIOGRAPHIC INDICATIONS	84	94	-10	6.74

* ONLY THOSE TASKS RATED ABOVE 6.00 IN TASK DIFFICULTY AND PERFORMED BY A GREATER THAN TEN PERCENT DIFFERENTIAL WERE INCLUDED

COMPARISON OF MAJCOMs

Tasks performed by NDI personnel in eight MAJCOMs were compared to identify any differences related to MAJCOM assignment. Generally, job content was similar across MAJCOMs for 5-skill level personnel. However, discernable differences were noted and several MAJCOM-unique tasks were identified. While 5-skill level personnel in all eight MAJCOMs reported performing the full range of technically oriented tasks, the amount of time devoted to the various inspection methods varied somewhat by MAJCOM.

Air Force Systems Command: The job content of 5-skill level personnel assigned to AFSC differed most notably from other MAJCOMs. Members reported spending considerably more time on supervision and management tasks than other personnel. In addition, seven bond testing and pre-inspection tasks were identified that were performed to a greater extent by AFSC personnel than by those in other MAJCOMs. Table 17 lists the differentiating tasks for AFSC.

Aerospace Defense Command: Compared to other personnel, ADCOM 42752 personnel spent more of their time on liquid penetrant and magnetic particle inspection tasks. Further, members reported spending much time on JOAP analysis and associated administrative tasks. Conversely, eddy current and ultrasonic inspection tasks consumed less time relative to NDI personnel in other MAJCOMs. Table 18 lists tasks which are performed less by ADCOM personnel in comparison to specialists in other MAJCOMs.

Pacific Air Forces: Members assigned to PACAF were differentiated by the amount of time devoted to radiographic inspection. PACAF NDI personnel spent more relative time (17 percent) on radiographic inspection tasks than on any other inspection technique. Only 20 percent of PACAF incumbents reported charging dosimeters whereas between 50 and 75 percent of the members of the other MAJCOMs reported doing so.

Other MAJCOMs (ATC, MAC, SAC, TAC, USAFE): Differences in the job descriptions of the other five MAJCOMs were less notable, although some differences merit mentioning. Members assigned to TAC and USAFE spent more time performing JOAP analysis tasks relative to other MAJCOMs. SAC personnel devoted relatively less of their time to radiographic inspection than other personnel, while those in MAC reported less performance of JOAP analysis tasks than members of most other MAJCOMs.

Summary

The differences in tasks performed by personnel in the various MAJCOMs were slight. For the most part, job content was very similar, although some MAJCOMs spent more time performing certain inspection methods than others.

TABLE 17

TASKS PERFORMED MORE BY AFSC PERSONNEL COMPARED TO OTHER MAJCOMs

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT AFSC MEMBERS PERFORMING</u>	<u>MAXIMUM PERCENT OF OTHER MAJCOMs PERFORMING</u>
C44	EVALUATE ADMINISTRATIVE FORMS, FILES, OR PROCEDURES	33	22
F134	RECORD INDICATIONS BY SCOTCH TAPE METHODS	33	21
G139	DEVELOP BOND TESTING INSPECTION TECHNIQUES	33	24
G141	IDENTIFY BOND TESTING INDICATIONS	83	52
G142	INTERPRET BOND TESTING INDICATIONS	75	52
G143	OPERATE BOND TESTING EQUIPMENT	75	56
G145	SET UP BOND TESTING EQUIPMENT	75	56

TABLE 18

TASKS PERFORMED BY ALL MAJCOMs EXCEPT ADCOM

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT ADCOM MEMBERS PERFORMING</u>	<u>MINIMUM PERCENT OF OTHER MAJCOMs PERFORMING</u>
E105	RECORD JOAP DATA ON PUNCH CARD TRANSCRIPT FORMS (AF FORM 1530)	8	28
E106	RECORD NDI DATA ON AEROSPACE VEHICLE FLIGHT DATA DOCUMENT FORMS (AFTO FORM 781 SERIES)	8	32
E121	VERIFY JOAP DATA ON KEYPUNCH CARDS	17	27

CONUS/OVERSEAS ANALYSIS

Tasks performed by 5-skill level NDI personnel assigned to CONUS and overseas bases were compared to determine whether geographic location affected job content. The tasks performed by both groups were virtually identical, with only minor exceptions. As Table 19 shows, fewer NDI personnel assigned overseas performed bond testing functions. Conversely, a smaller percentage of personnel in CONUS performed Joint Oil Analysis Program (JOAP) inspections and associated administrative tasks.

Background data on the two groups were also similar. Members of each group averaged 40 months in the career field, 50 months in the service, were in paygrade E-4, and performed an average of 126 tasks (see Table 20). However, overseas NDI personnel expressed slightly higher job satisfaction than those in CONUS, as Table 20 illustrates.

TABLE 19

TASKS WHICH BEST DIFFERENTIATE CONUS AND OVERSEAS 427X2 PERSONNEL

TASK	TITLE	427X2 CONUS (N=265)	427X2 O'SEAS (N=80)	DIFFERENCE
G143	OPERATE BOND TESTING EQUIPMENT	49	27	+22
G142	INTERPRET BOND TESTING INDICATIONS	41	21	+20
G141	IDENTIFY BOND TESTING INDICATIONS	40	21	+19
G145	SET UP BOND TESTING EQUIPMENT	46	29	+17
D75	EVALUATE OJT TRAINEES	24	8	+16
J199	OPERATE ULTRASONIC FLAW DETECTION EQUIPMENT	65	51	+14
G144	PERFORM COIN-TAP TEST	39	25	+14
J188	DETERMINE TRANSDUCER'S ANGLE OF INCIDENCE AND RESOLUTION USING TEST STANDARDS	66	52	+14
F133	RECORD INDICATIONS BY PHOTOGRAPH METHOD	33	20	+13
J204	SET UP ULTRASONIC THICKNESS MEASUREMENT EQUIPMENT	53	40	+13
I174	PERFORM MANUAL RADIOGRAPHIC FILM PROCESSING	60	86	-26
N258	PERFORM COMPLETE CALIBRATION VERIFICATION CHECKS ON ATOMIC EMISSION IN SPECTROMETERS	60	80	-20
N267	STANDARDIZE ATOMIC EMISSION SPECTROMETERS	61	80	-19
O276	VERIFY CONCENTRATION OF OUTDATED OIL STANDARDS	29	46	-17
E105	RECORD JOAP DATA ON PUNCH CARD TRANSCRIPTION FORMS (AF FORM 1530)	37	52	-15
N263	PREPARE CORRELATION RESULTS FORM LETTERS	38	51	-13
I183	SELECT RADIOGRAPHIC EXPOSURE TECHNIQUE IN ACCORDANCE WITH TECHNICAL DATA	81	94	-13
N257	PERFORM ACCURACY CALCULATIONS ON ATOMIC EMISSION SPECTROMETERS	55	68	-13
N251	ANALYZE CORRELATION SAMPLES	59	71	-12
B36	INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	38	50	-12

TABLE 20
COMPARISON OF SELECTED BACKGROUND VARIABLES
CONUS VS OVERSEAS 42753s

VARIABLE	CONUS 42752 (N=265)	OVERSEAS 42752 (N=80)
AVERAGE NUMBER OF TASKS	126	126
AVERAGE GRADE	3.8	3.8
AVERAGE TIME IN CAREER FIELD (MONTHS)	40	40
AVERAGE TAFMS (MONTHS)	51	50
<u>JOB INTEREST:</u>		
DULL	7%	2%
SO-SO	12%	9%
INTERESTING	81%	85%
NOT REPORTED	0%	4%
<u>JOB UTILIZES TALENTS:</u>		
NOT AT ALL	18%	9%
FAIRLY WELL OR BETTER	82%	91%
<u>JOB UTILIZES TRAINING:</u>		
NOT AT ALL	11%	13%
FAIRLY WELL OR BETTER	89%	86%
NOT REPORTED	0%	1%
<u>PLAN TO REENLIST:</u>		
NO OR PROBABLY NO	51%	39%
YES OR PROBABLY YES	46%	59%
NOT REPORTED	3%	2%

ANALYSIS OF TASK DIFFICULTY

From a listing of personnel identified for the AFSC 427X2 job survey, technicians holding primarily the 7-skill level from various locations and commands were selected to rate task difficulty. Tasks were rated on a nine-point scale from extremely low to extremely high difficulty. Difficulty is defined as the length of time it takes an average career ladder member to learn to do the task. Interrater reliability (as assessed through components of variance of standardized group means) among the 60 raters was .96. Ratings were adjusted so that tasks of average difficulty have ratings of 5.00.

Tasks rated above average in difficulty were associated mainly with ultrasonic, eddy current, and spectrographic oil analysis and with management, supervision, and training. Tasks associated with identifying and interpreting indications elicited during inspections were also rated above average in difficulty. In contrast, tasks dealing with administration functions, pre-inspection functions, liquid penetrant and magnetic particle inspection, and facilities and equipment maintenance were rated below average in difficulty. Tables 21 and 22 list tasks which were rated as most and least difficult respectively.

Job Difficulty Index (JDI)

In addition to reviewing the relative difficulty of tasks, it is useful to examine the relative difficulty of jobs. To obtain a relative Job Difficulty Index (JDI), the task difficulty ratings for tasks performed and the time spent on those tasks by specified job groups were entered into a statistically reliable formula which predicts overall job difficulty. The resultant JDIs provide a relative measure of how jobs vary in difficulty when compared to other jobs identified in the sample. The index ranks jobs on a scale of one (for very easy jobs) to 25 (for very difficulty jobs). The indices are then adjusted so that the average JDI is 13.00. Individual JDIs were computed for the major job groups identified in the CAREER LADDER STRUCTURE section of this report and are listed in Table 23.

Within the 427X2 sample, the NCOICs, NDI Lab performed the job rated most difficult, while the Basic Methods Inspectors performed the job rated least difficult. The difficulty of the NCOICs job can be accounted for by the many difficult tasks performed in both their technical and supervisory capacities. On the other hand, the Basic Methods Inspectors performed very few tasks (58), most of which were perceived by technicians to be easy. These tasks included many liquid penetrant and magnetic particle inspection tasks. As Table 22 shows, many of these tasks were judged to be among the easiest tasks NDI personnel perform.

TABLE 21

THE 15 TASKS RATED MOST DIFFICULT BY 427X2 PERSONNEL

<u>TASK</u>	<u>TITLE</u>	<u>TASK DIFFICULTY</u>	<u>PERCENT MEMBERS PERFORMING</u>
J189	DEVELOP ULTRASONIC FLAW DETECTION TECHNIQUES	7.08	41
N259	PERFORM DIAGNOSTIC CHECKS OF SPECTROMETER OTHER THAN REPEATABILITY AND ACCURACY CALCULATIONS	7.00	37
B43	SUPERVISE FABRICATION SUPERINTENDENTS (AFSC 42799)	6.97	6
J194	INTERPRET ULTRASONIC FLAW DETECTION INDICATIONS	6.95	69
C59	WRITE STAFF STUDIES, SURVEYS, OR SPECIAL REPORTS	6.89	15
A19	SERVE ON SPECIALTY KNOWLEDGE TEST (SKT) BOARDS	6.86	5
C58	WRITE CIVILIAN PERFORMANCE RATINGS OR SUPERVISORY APPRAISALS	6.81	12
I169	INTERPRET RADIOGRAPHIC INDICATIONS	6.74	78
I167	DEVELOP RADIOGRAPHIC EXPOSURE TECHNIQUES WHEN TECHNICAL DATA IS NOT AVAILABLE	6.73	64
N255	OPERATE ATOMIC ABSORPTION SPECTROMETERS USING NITROUS OXIDE GAS	6.70	8
M233	PERFORM DIAGNOSTIC CHECKS ON ATOMIC EMISSION SPECTROMETER	6.70	48
B24	COUNSEL PERSONNEL ON PERSONAL PROBLEMS	6.69	48
J192	IDENTIFY ULTRASONIC FLAW DETECTION INDICATIONS	6.68	69
N258	PERFORM COMPLETE CALIBRATION VERIFICATION CHECKS ON ATOMIC EMISSION IN SPECTROMETERS	6.65	53
N261	PERFORM REPEATABILITY CALCULATIONS ON ATOMIC EMISSION SPECTROMETERS	6.65	42

TABLE 22

THE 15 TASKS RATED LEAST DIFFICULT BY 427X2 PERSONNEL

<u>TASK</u>	<u>TITLE</u>	<u>TASK DIFFICULTY</u>	<u>PERCENT MEMBERS PERFORMING</u>
H156	REMOVE EMULSIFIERS FROM MATERIALS	3.36	79
H146	APPLY DRY DEVELOPER TO MATERIALS	3.29	44
H147	APPLY EMULSIFIERS TO MATERIALS	3.28	79
H149	APPLY WET DEVELOPER TO MATERIALS	3.24	76
H148	APPLY PENETRANT TO MATERIALS	3.18	81
H152	DRY MATERIAL PRIOR TO OR DURING PENETRANT INSPECTIONS	3.12	72
F132	PERFORM POST-CLEANING OF MATERIAL AFTER INSPECTIONS	3.06	77
A2	ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	2.69	30
J185	APPLY COUPLANTS	2.67	73
F122	DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	2.61	79
J201	REMOVE COUPLANTS	2.54	74
P280	MOW GRASS OR MAINTAIN SHOP GROUNDS	2.28	51
P279	MOP, WAX, OR POLISH FLOORS OR VACUUM RUGS OR CARPETS	2.18	73
P284	WASH OR WAX VEHICLES, SUCH AS PICK-UP TRUCKS OR STEP VANS	2.05	23
P283	REMOVE AND DISPOSE OF TRASH OR WASTE MATERIALS	1.96	71

TABLE 23

JOB DIFFICULTY INDICES AND RELATED DATA BY JOB GROUPS

JOB GROUP		AVERAGE NUMBER OF TASKS PERFORMED	ATDPUT*	JDI**
Ia.	BRANCH SUPERVISORS (N=71)	50	5.42	11.43
Ib.	ADMINISTRATORS (N=16)	102	5.16	14.17
IIa.	NCOICs, NDI LAB (N=107)	207	4.92	17.58
IIb.	EXPERIENCED GENERAL INSPECTORS (N=302)	138	4.70	13.72
IIc.	JOAP INSPECTORS (N=21)	131	4.81	13.91
IId.	JUNIOR INSPECTORS (N=62)	91	4.50	9.11
III.	RADIOGRAPHIC INSPECTORS (N=7)	81	4.59	9.02
IV.	NDI EQUIPMENT INSPECTORS (N=10)	73	4.55	7.98
V.	BASIC METHODS INSPECTORS (N=9)	58	4.31	4.88
VI.	JOAP LAB PERSONNEL (N=9)	42	5.01	7.91

* AVERAGE TASK DIFFICULTY PER UNIT TIME

** JOB DIFFICULTY INDEX, AVERAGE = 13.00

COMPARISON OF CAREER LADDER DOCUMENTS TO SURVEY DATA

AFR 39-1 Specialty Descriptions

Survey data were compared with the specialty descriptions contained in AFR 39-1. The specialty descriptions accurately portrayed the major functions and tasks performed by personnel in each skill level.

Specialty Training Standard

STS 427X2, dated April 1979, was reviewed for 3-, 5-, and 7-skill level personnel. Assistance was provided by subject matter specialists at the Chanute Technical Training Center, who matched inventory tasks with STS items. Each of the STS subparagraphs containing task knowledge or performance requirement were compared to the survey results. Overall, the STS appeared complete in providing general training requirements. Most STS subparagraphs were supported by the survey data. However, two exceptions were noted. First, the STS referenced two skills which were performed by a very small percentage of 427X2 personnel. Paragraph 15f referenced developing new bond inspection techniques. Less than 16 percent of 5-skill levels and nine percent of 3-skill levels performed this task. Similarly, subparagraph 17b(3) references operating atomic absorption spectrometers, while fewer than 12 percent of 3-, 5-, and 7-skill level personnel reporting working with this requirement. Second, several technical tasks were identified that were performed by a large percentage of Nondestructive Inspection personnel, but were not referenced to specific STS paragraphs (see Table 24).

Both the tasks seldom performed but referenced and those commonly performed but not referenced in the STS have been identified. Tech school personnel should review these items to determine whether changes in the STS are warranted. Survey data regarding these tasks will be furnished to the technical training school for this purpose.

TABLE 24

TECHNICAL TASKS NOT REFERENCED IN STS 427X2
(PERCENT MEMBERS PERFORMING)

TASK	TITLE	3-SKILL LEVEL (N=55)	5-SKILL LEVEL (N=343)	7-SKILL LEVEL (N=178)
F122	DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	95	92	81
F123	DETERMINE IF NONCONDUCTIVE COATING THICKNESS WILL AFFECT INSPECTIONS	67	76	70
F124	DETERMINE MATERIAL CONSTRUCTION, SUCH AS SOLID CONSTRUCTION OR HONEYCOMB	49	60	59
F127	IDENTIFY MATERIAL TYPE OR COMPOSITION BY USING CONDUCTIVITY METERS	46	57	62
F128	IDENTIFY SURFACE CONDITION OF MATERIAL, SUCH AS SMOOTHNESS OR ROUGHNESS	76	76	63
F130	MEASURE THICKNESS OF MATERIAL OR LENGTH OF INDICATIONS BY HAND MEASURING DEVICES, SUCH AS MICROMETERS OR RULERS	56	60	55
F132	PERFORM POST-CLEANING OF MATERIAL AFTER INSPECTIONS	93	92	75
F133	RECORD INDICATIONS BY PHOTOGRAPH METHODS	24	30	38
F135	RECORD INDICATIONS BY SKETCH METHODS	18	27	34
F138	VERIFY CLEANLINESS OF MATERIAL FOR INSPECTIONS	86	91	79
0276	VERIFY CONCENTRATION OF OUTDATED OIL STANDARDS	26	33	46

COMPARISON TO THE 1975 SURVEY

As Table 25 indicates, the NDI career ladder has remained very stable over the last four years. The groups identified in 1975 were for the most part identified in the 1979 study. Three job groups exist however, that have no equivalent group in the other survey. The present study isolated Administrators (GRP021) and JOAP Inspectors (GRP095) which had no 1975 counterparts. The 1975 study identified NCOIC, JOAP Lab, a group which did not appear in the present study.

Compared to NDI personnel in the 1975 study, those in the present survey performed more JOAP related tasks. The 1975 survey report stated that JOAP functions had not been fully integrated into the NDI career field, and that only 60 percent of that surveys' primary worker job cluster, the NDI Specialists, performed JOAP tasks. The present survey indicates that JOAP has in fact become an integral part of NDI, and that 79 percent of the primary worker job group, the Experienced General Inspectors (GRP093), perform JOAP related tasks.

TABLE 25

COMPARISON BETWEEN CURRENT AND PREVIOUS SURVEYS

<u>GROUPS IDENTIFIED IN 1975 SURVEY</u>	<u>CORRESPONDING GROUP IDENTIFIED IN 1979</u>
NCOIC, FABRICATION BRANCH (N=63)	BRANCH SUPERVISORS (N=71)
-	ADMINISTRATORS (N=16)
NDI SUPERVISORS (N=145)	NCOIC, NDI LAB (N=107)
NDI SPECIALIST (N=301)	EXPERIENCED GENERAL INSPECTORS (N=302)
-	JOAP INSPECTORS (N=21)
APPRENTICE NDI SPECIALIST (N=56)	JUNIOR INSPECTORS (N=62)
LIQUID PENETRANT, RADIOGRAPHIC AND MAGNETIC PARTICLE INSPECTIONS SPECIALIST/TRAINER (N=19)	RADIOGRAPHIC INSPECTORS (N=7) NDI EQUIPMENT INSPECTORS (N=10) BASIC METHODS INSPECTORS (N=9)
SOAP SPECIALIST (N=8)	JOAP LAB PERSONNEL (N=9)
NCOIC, SOAP LAB (N=9)	-

IMPLICATIONS

The results of this occupational survey suggest that the Nondestructive Inspection specialty is essentially a very technically oriented specialty which has remained relatively stable over time. The only major change in the career ladder since the last survey in 1975 appears to be the integration of JOAP related functions into the general NDI job. Presently, 79 percent of the General Inspectors report performing these tasks compared to 60 percent in 1975.

The survey identified no major problem areas. While the members of some job types reported relatively low average job interest and intent to reenlist, they were found in small groups composed primarily of first enlistment personnel who had not yet made a career decision.

The Nondestructive Inspection specialty is highly technical and while the more senior enlisted personnel perform supervisory and management tasks, they also continue to perform many technical tasks, particularly the more difficult identification and interpretation tasks. Even those individuals who are members of the Administrators group (averaging 16 years in service and over ten years in the career field) report performing technical tasks, such as interpreting radiographic, ultrasonic, and eddy current indications. Only in the most senior supervisory and management group (Branch Supervisors, averaging 17 years in the career field and over 20 years in the service) do technical tasks become a very small part of the job (three percent time spent).

This technical orientation of the job may partially account for the generally high job interest, and feelings of good use of talents and training, which are somewhat higher than the average of all specialties surveyed in 1978. These data speak well for the classification, training, and utilization of Nondestructive Inspection personnel in the USAF.

APPENDIX A

TABLE I
REPRESENTATIVE TASKS PERFORMED BY BRANCH SUPERVISORS
(GRP022, N=71)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
B30	DRAFT CORRESPONDENCE	96
B24	COUNSEL PERSONNEL ON PERSONAL PROBLEMS	96
B23	COUNSEL PERSONNEL ON MILITARY RELATED PROBLEMS	94
B35	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	92
A5	ESTABLISH ORGANIZATIONAL POLICIES, OFFICE INSTRUCTIONS (OI), OR STANDARD OPERATING PROCEDURES (SOP)	92
C49	EVALUATE INSPECTION REPORTS OR PROCEDURES	90
C57	WRITE AIRMEN PERFORMANCE REPORTS (APR)	87
A1	ASSIGN PERSONNEL TO DUTY POSITIONS	87
C47	EVALUATE COMPLIANCE WITH WORK STANDARDS	86
B40	SUPERVISE MILITARY PERSONNEL OTHER THAN AFSC 427X2	83
C48	EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	83
A15	SCHEDULE LEAVES OR PASSES	82
A3	DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	80
C44	EVALUATE ADMINISTRATIVE FORMS, FILES, OR PROCEDURES	79
C55	EVALUATE SUGGESTIONS	79
B32	IMPLEMENT SAFETY PROGRAMS OR PROCEDURES	77
B25	DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	76
C46	EVALUATE BUDGETING OR FINANCIAL REQUIREMENTS	76
C56	INVESTIGATE ACCIDENTS OR INCIDENTS	76
A16	SCHEDULE PERSONNEL FOR TDY	76

TABLE II
 REPRESENTATIVE TASKS PERFORMED BY ADMINISTRATORS
 (GRP021, N=16)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
D66	COUNSEL TRAINEES ON TRAINING PROGRESS	100
B24	COUNSEL PERSONNEL ON PERSONAL PROBLEMS	100
A6	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	100
C57	WRITE AIRMEN PERFORMANCE REPORTS (APR)	94
A9	PLAN OR SCHEDULE WORK ASSIGNMENTS	94
B41	SUPERVISE NONDESTRUCTIVE INSPECTION SPECIALISTS (AFSC 42772)	94
D76	EVALUATE OJT TRAINERS	94
B35	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	94
D73	DIRECT OR IMPLEMENT ON-THE-JOB TRAINING (OJT) PROGRAMS	94
D61	ASSIGN OJT TRAINERS	94
E86	MAINTAIN D-18 PRIORITY MONITOR REPORTS FILES	88
D75	EVALUATE OJT TRAINEES	88
E91	MAINTAIN NDI INSPECTION REPORT FILES, EXCEPT JOAP	88
C47	EVALUATE COMPLIANCE WITH WORK STANDARDS	88
A1	ASSIGN PERSONNEL TO DUTY POSITIONS	88
B23	COUNSEL PERSONNEL ON MILITARY RELATED PROBLEMS	88
A15	SCHEDULE LEAVES OR PASSES	88
E85	MAINTAIN D-04 DAILY DOCUMENT REGISTERS	81
B30	DRAFT CORRESPONDENCE	81
B25	DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	81

TABLE III
 REPRESENTATIVE TASKS PERFORMED BY NCOICs, NDI LAB
 (GRP090, N=107)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
B25	DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	99
H155	INTERPRET PENETRANT INDICATIONS	99
I169	INTERPRET RADIOGRAPHIC INDICATIONS	98
K213	IDENTIFY MAGNETIC PARTICLE INDICATIONS	98
F122	DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	98
A9	PLAN OR SCHEDULE WORK ASSIGNMENTS	97
K214	INTERPRET MAGNETIC PARTICLE INDICATIONS	97
D67	DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	97
I172	PARTICIPATE IN SILVER RECOVERY PROGRAM	97
L228	INTERPRET EDDY CURRENT INDICATIONS	97
K210	CHECK FOR DEMAGNETIZATION	97
I166	DETERMINE PLACEMENT OF RADIATION WARNING EQUIPMENT	97
I170	MEASURE RADIATION EXPOSURE LEVELS USING RADIATION SURVEY METERS	97
L227	IDENTIFY EDDY CURRENT INDICATIONS	97
K223	SELECT TYPE MAGNETISM TO USE FOR INSPECTIONS	97
K209	CALCULATE AMPERAGE REQUIREMENTS	97
L232	SELECT EDDY CURRENT PROBES AND EQUIPMENT	97
L225	CHECK EDDY CURRENT EQUIPMENT SENSITIVITY USING STANDARDS	97
K222	SELECT TYPE CURRENT TO USE FOR DEMAGNETIZATION	97
H160	SELECT PENETRANT DWELL TIMES	97

TABLE IV

REPRESENTATIVE TASKS PERFORMED BY EXPERIENCED GENERAL INSPECTORS
(GRP093, N=302)

TASK	TITLE	PERCENT MEMBERS PERFORMING
K215	OPERATE MAGNETIC PARTICLE EQUIPMENT	100
K213	IDENTIFY MAGNETIC PARTICLE INDICATIONS	100
K208	APPLY WET MAGNETIC PARTICLES	100
H155	INTERPRET PENETRANT INDICATIONS	99
H148	APPLY PENETRANT TO MATERIALS	99
K214	INTERPRET MAGNETIC PARTICLE INDICATIONS	99
K210	CHECK FOR DEMAGNETIZATION	99
K207	APPLY MAGNETIZING CURRENT TO MATERIALS	99
H156	REMOVE EMULSIFIERS FROM MATERIALS	99
I171	OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	99
H157	REMOVE PENETRANT FROM MATERIALS	98
H160	SELECT PENETRANT DWELL TIMES	98
K211	DEMAGNETIZE MATERIALS	98
H153	IDENTIFY PENETRANT INDICATIONS	98
H147	APPLY EMULSIFIERS TO MATERIALS	98
I170	MEASURE RADIATION EXPOSURE LEVELS USING RADIATION SURVEY METERS	98
H154	INSPECT SURFACES FOR PENETRANT REMOVAL AFTER POST-CLEANING	98
I163	CLEAR EXPOSURE AREA OF UNAUTHORIZED PERSONNEL	98
K223	SELECT TYPE MAGNETISM TO USE FOR INSPECTIONS	98
I177	PREPARE FILM PROCESSING EQUIPMENT PRIOR TO USE	97

TABLE V
REPRESENTATIVE TASKS PERFORMED BY JOAP INSPECTORS
(GRP095, N=21)

TASK	TITLE	PERCENT MEMBERS PERFORMING
E116	RECORD WEAR METAL CONCENTRATIONS ON OIL ANALYSIS REQUEST FORMS (DD FORM 2027)	100
N267	STANDARDIZE ATOMIC EMISSION SPECTROMETERS	100
M249	PERFORM PRE-OPERATIONAL INSPECTIONS OF SOAP EQUIPMENT	100
M239	PERFORM PERIODIC OPERATIONAL INSPECTIONS OR OPERATOR MAINTENANCE OF JOAP EQUIPMENT	100
H153	IDENTIFY PENETRANT INDICATIONS	100
H155	INTERPRET PENETRANT INDICATIONS	100
H148	APPLY PENETRANT TO MATERIALS	100
H158	SELECT DEVELOPER DWELL TIMES BY REFERENCE TO TECHNICAL DATA	100
F138	VERIFY CLEANLINESS OF MATERIAL FOR INSPECTIONS	100
H147	APPLY EMULSIFIERS TO MATERIALS	100
H160	SELECT PENETRANT DWELL TIMES	100
H161	SELECT PENETRANT METHODS	100
K215	OPERATE MAGNETIC PARTICLE EQUIPMENT	100
H154	INSPECT SURFACES FOR PENETRANT REMOVAL AFTER POST-CLEANING	100
H150	DETERMINE DEVELOPER DWELL TIMES THEN TECHNICAL DATA IS NOT AVAILABLE	100
K223	SELECT TYPE MAGNETISM TO USE FOR INSPECTIONS	100
N260	PERFORM JOAP TREND ANALYSIS	95
E117	RECORD WEAR METAL CONCENTRATIONS ON OIL ANALYSIS REQUEST FORMS (DD FORM 2026)	95
N251	ANALYZE CORRELATION SAMPLES	95
M233	PERFORM DIAGNOSTIC CHECKS ON ATOMIC EMISSION SPECTROMETER	95

TABLE VI
 REPRESENTATIVE TASKS PERFORMED BY JUNIOR INSPECTORS
 (GRP085, N=62)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
H148	APPLY PENETRANT TO MATERIALS	100
H153	IDENTIFY PENETRANT INDICATIONS	100
H157	REMOVE PENETRANT FROM MATERIALS	100
K207	APPLY MAGNETIZING CURRENT TO MATERIALS	100
K213	IDENTIFY MAGNETIC PARTICLE INDICATIONS	100
H155	INTERPRET PENETRANT INDICATIONS	98
K215	OPERATE MAGNETIC PARTICLE EQUIPMENT	98
K210	CHECK FOR DEMAGNETIZATION	98
H156	REMOVE EMULSIFIERS FROM MATERIALS	97
F132	PERFORM POST-CLEANING OF MATERIAL AFTER INSPECTIONS	97
I171	OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	97
K208	APPLY WET MAGNETIC PARTICLES	97
I177	PREPARE FILM PROCESSING EQUIPMENT PRIOR TO USE	97
K222	SELECT TYPE CURRENT TO USE FOR DEMAGNETIZATION	97
F122	DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	97
H147	APPLY EMULSIFIERS TO MATERIALS	95
K211	DEMAGNETIZE MATERIALS	95
I184	SET UP RADIOGRAPHIC EXPOSURE EQUIPMENT	95
H160	SELECT PENETRANT DWELL TIMES	94
H159	SELECT EMULSIFIER DWELL TIMES	94

TABLE VII
 REPRESENTATIVE TASKS PERFORMED BY RADIOGRAPHIC INSPECTORS
 (GRP084, N=7)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
I168	IDENTIFY RADIOGRAPHIC INDICATIONS	100
I169	INTERPRET RADIOGRAPHIC INDICATIONS	100
I166	DETERMINE PLACEMENT OF RADIATION WARNING EQUIPMENT	100
I176	POST RADIATION MONITORS	100
L224	BALANCE EDDY CURRENT EQUIPMENT	100
K211	DEMAGNETIZE MATERIALS	100
K215	OPERATE MAGNETIC PARTICLE EQUIPMENT	100
I163	CLEAR EXPOSURE AREA OF UNAUTHORIZED PERSONNEL	100
I175	POSITION RADIATION WARNING EQUIPMENT	100
I171	OPERATE RADIOGRAPHIC EQUIPMENT FOR EXPOSURES	100
K207	APPLY MAGNETIZING CURRENT TO MATERIALS	100
H148	APPLY PENETRANT TO MATERIALS	100
I170	MEASURE RADIATION EXPOSURE LEVELS USING RADIATION SURVEY METERS	100
I184	SET UP RADIOGRAPHIC EXPOSURE EQUIPMENT	100
K213	IDENTIFY MAGNETIC PARTICLE INDICATIONS	100
K210	CHECK FOR DEMAGNETIZATION	100
H155	INTERPRET PENETRANT INDICATIONS	100
H153	IDENTIFY PENETRANT INDICATIONS	100
F132	PERFORM POST-CLEANING OF MATERIAL AFTER INSPECTIONS	100
F122	DETERMINE IF MATERIAL IS MAGNETIC OR NONMAGNETIC USING MAGNETS	100

TABLE VIII
 REPRESENTATIVE TASKS PREFORMED BY NDI EQUIPMENT INSPECTORS
 (GRP074, N=10)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
H156	REMOVE EMULSIFIERS FROM MATERIALS	100
H147	APPLY EMULSIFIERS TO MATERIALS	100
H148	APPLY PENETRANT TO MATERIALS	100
K215	OPERATE MAGNETIC PARTICLE EQUIPMENT	100
P279	MOP, WAX, OR POLISH FLOORS OR VACUUM RUGS OR CARPETS	100
L224	BALANCE EDDY CURRENT EQUIPMENT	100
M236	PERFORM PERIODIC OPERATIONAL INSPECTIONS OR OPERATOR MAINTENANCE OF MAGNETIC PARTICLE EQUIPMENT	100
H157	REMOVE PENETRANT FROM MATERIALS	90
H149	APPLY WET DEVELOPER TO MATERIALS	90
H154	INSPECT SURFACES FOR PENETRANT REMOVAL AFTER POST-CLEANING	90
P283	REMOVE AND DISPOSE OF TRASH OR WASTE MATERIALS	90
H155	INTERPRET PENETRANT INDICATIONS	90
H153	IDENTIFY PENETRANT INDICATIONS	90
K207	APPLY MAGNETIZING CURRENT TO MATERIALS	90
K211	DEMAGNETIZE MATERIALS	90
J185	APPLY COUPLANTS	90
K210	CHECK FOR DEMAGNETIZATION	90
L227	IDENTIFY EDDY CURRENT INDICATIONS	90
K214	INTERPRET MAGNETIC PARTICLE INDICATIONS	90
K222	SELECT TYPE CURRENT TO USE FOR DEMAGNETIZATION	90

TABLE IX
 REPRESENTATIVE TASKS PERFORMED BY BASIC METHODS INSPECTORS
 (GRP038, N=9)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
H148	APPLY PENETRANT TO MATERIALS	100
H157	REMOVE PENETRANT FROM MATERIALS	100
K215	OPERATE MAGNETIC PARTICLE EQUIPMENT	100
K211	DEMAGNETIZE MATERIALS	100
K207	APPLY MAGNETIZING CURRENT TO MATERIALS	100
H154	INSPECT SURFACES FOR PENETRANT REMOVAL AFTER POST-CLEANING	100
K210	CHECK FOR DEMAGNETIZATION	100
L224	BALANCE EDDY CURRENT EQUIPMENT	100
L232	SELECT EDDY CURRENT PROBES AND EQUIPMENT	100
L227	IDENTIFY EDDY CURRENT INDICATIONS	100
H149	APPLY WET DEVELOPER TO MATERIALS	89
H153	IDENTIFY PENETRANT INDICATIONS	89
H155	INTERPRET PENETRANT INDICATIONS	89
H146	APPLY DRY DEVELOPER TO MATERIALS	89
K208	APPLY WET MAGNETIC PARTICLES	89
H160	SELECT PENETRANT DWELL TIMES	89
H158	SELECT DEVELOPER DWELL TIMES BY REFERENCE TO TECHNICAL DATA	89
F132	PERFORM POST-CLEANING OF MATERIAL AFTER INSPECTIONS	89
L230	OPERATE EDDY CURRENT EQUIPMENT FOR FLAW DETECTION	89
K221	SELECT RESIDUAL OR CONTINUOUS APPLICATION OF MAGNETIC PARTICLES	89

TABLE X
 REPRESENTATIVE TASKS PERFORMED BY JOAP LAB PERSONNEL
 (GRP012, N=9)

<u>TASK</u>	<u>TITLE</u>	<u>PERCENT MEMBERS PERFORMING</u>
E116	RECORD WEAR METAL CONCENTRATIONS ON OIL ANALYSIS RECORD FORMS (DD FORM 2027)	100
E117	RECORD WEAR METAL CONCENTRATIONS ON OIL ANALYSIS REQUEST FORMS (DD FORM 2026)	100
E102	PREPARE TRANSIT JOAP RECORDS	100
E121	VERIFY JOAP DATA KEYPUNCH CARDS	100
N256	OPERATE ATOMIC EMISSION SPECTROMETERS	89
N260	PERFORM JOAP TREND ANALYSIS	89
N267	STANDARDIZE ATOMIC EMISSION SPECTROMETERS	89
N251	ANALYZE CORRELATION SAMPLES	89
P283	REMOVE AND DISPOSE OF TRASH OR WASTE MATERIALS	89
N253	DETERMINE SOURCES OF WEAR METALS OR CONTAMINATION	89
N261	PERFORM REPEATABILITY CALCULATIONS ON ATOMIC EMISSION SPECTROMETERS	78
M239	PERFORM PERIODIC OPERATIONAL INSPECTIONS OR OPERATOR MAINTENANCE OF JOAP EQUIPMENT	78
M249	PERFORM PRE-OPERATIONAL INSPECTIONS OF SOAP EQUIPMENT	78
P278	MAINTAIN SHOP FACILITIES	67
N258	PERFORM COMPLETE CALIBRATION VERIFICATION CHECKS ON ATOMIC EMISSION IN SPECTROMETERS	67
E105	RECORD JOAP DATA ON PUNCH CARD TRANSCRIPT FORMS (AF FORM 1530)	67
E96	PREPARE JOAP MAINTENANCE ACTION REPORTS	67
N257	PERFORM ACCURACY CALCULATIONS ON ATOMIC EMISSION SPECTROMETERS	67
P279	MOP, WAX, OR POLISH FLOORS OR VACUUM RUGS OR CARPETS	67
F129	LOCATE INFORMATION BY REFERENCE TO TECHNICAL DATA	56