USING OCCUPATIONAL SURVEYS TO DEVELOP AIR FORCE SPECIALTY TRAINING STANDARDS

FREDERICK B. BOWER, JR., MAJOR, USAF
Detachment 805 AFROTC, Texas A&M University

As the need for effective management of our military budget becomes more critical each year, we must constantly seek out effective ways to utilize both personnel and material resources. With this in mind, Air Force Air Training Command (ATC) training managers are developing programs which reduce the amount of resident training airmen receive. These reduced resident training programs result in lower training costs and higher productivity by placing airmen on the job sooner. However, such a course must be carefully developed. In order for a program of this type to work, training cannot be reduced arbitrarily. Airmen must be trained to perform those duties and tasks required in their first job or first enlistment.

All ATC curriculum managers have been tasked with structuring basic airmen resident courses to prepare students for their first job. This entails not only a review of each resident course but also a review of the entire airmen training program. This is accomplished through careful analysis of a career's Specialty Training Standard (STS) which serves as the primary training outline for a career ladder. STS requirements identify needed training for the first job. Many STS requirements not required in the performance of the first job are now taught on-the-job (OJT). Other more technical STS requirements will be in follow-on resident training courses after the first enlistment. Consequently only career motivated individuals receive the extensive resident training required to perform the first job.

Beginning in 1977, at the direction of the ATC Commander, General John W. Roberts (1977), utilization and training workshops (initially called course scrubdowns) were scheduled to provide a forum for discussion of training needs. Training Managers, and users of the trained product all provide in-put toward course development. However, participants in the workshops had no means of displaying reliable data to substantiate training requirements. As a result, participation by the USAF Occupational Measurement Center, Airmen Career Ladders Analysis Section, was included in the workshop agenda. Personnel from this organization, were asked to furnish occupational survey data collected from airmen serving in the specialty being evaluated. The effects of using job analysis data in this way have had a profound and significant effect on the way training is now being reviewed within ATC.

The use of job analysis data in making training decisions is not a new concept. Morsh (1964) described one objective of the Air Force Occupational Survey Program as the determination of training needs. Since that time, the same theme has often been repeated, most recently by Keeth (1977) and Turner (1978). However, until institution of the Utilization Workshops, the full impact of job data as a training tool had never been so fully demonstrated. Other military services and institutions in the civilian sector are also using job analysis to make training decisions as was reported by Davis (1978) and Cunningham and Drewes (1978), but not to the extent now used by ATC. The Air Force, more than any other service, employs a system that outlines an airman's training requirements for a complete career in a single job specialty, and documentation for this system is the STS.

The STS as described by Air Force Regulation 8-13, Air Force Specialty Training Standards, outlines the training required to achieve various skill levels

within an enlisted Air Force Specialty (AFS). Through its use the individual training of airmen is standardized and the quality of training controlled. STSs are designed to perform the following:

a. Describe tasks, knowledges, and proficiency level requirements for one of more AFSs.

b. Specify the degree of training provided in formal schools.

c. Identify career development courses (CDCs) and additional references needed for upgrade and qualification training, and serve as a review for specialty knowledge tests (SKTs). As such, they are used:

(1) As course specification documents.

(2) For basic reference by major air commands in evaluating course graduates.

(3) As the basis for preparing career development courses.

(4) As a guide for establishing local OJT programs.

(5) As the basis for development of SKTs.

It is easy to see that development of STSs using occupational survey data encompasses more than just a basic training course, because the STS influences an individual's total training program and his job classification and promotion testing opportunities as well.

Flournoy (1978) traced the evolution of the STS form the earliest requirement for documentation of OJT to its present form. Air Force managers recognized the need for standardized training outlines in order to insure that airmen were trained to perform the job they were assigned. The increased size of the peace time Air Force, a rapid turnover of experienced personnel, and the constant increase in the cost of formal training initiated the movement away from formal training and toward the documented OJT program we have today. While this paper is not intended to debate the advantages and deficiencies of the STS it should be pointed out that the STS is the only single document currently being used by the U.S. military services that lists tasks, knowledges, and the skill levels required of an individual to progress satisfactorily in a chosen profession through a complete career.

The STS consists of two primary sections; the tasks, knowledges and study references section, and the proficiency level, progress record, and certification section. The tasks and knowledges are listed in columnar fashion with their associated study references. To the right of each task or knowledge element is the proficiency level and space for recording the progress and certification of that element for each of the three technical skill level progressions. The 3 -, 5 - and 7 - skill levels equate to the apprentice, specialist, and technician level of competence. The proficiency level code may be a task performance task knowledge, or subject knowledge level. These codes are explained in Figure 1.

Until ATC began the Utilization and Training Workshops, the tasks, knowledges and proficiency levels listed on STS documents were, for the most part, determined by subject matter experts assigned to ATC or through in-puts submitted by technicians in the field. Although occupational survey data is routinely sent to those responsible for STS construction, training managers often were not trained to extract the needed information from all the data available. Now, however, occupational survey analysts are present at the workshops to provide that service. Therefore occupational survey results have been most effective in enhancing the development or review of STS documents.

The process is relatively simple. Subject matter experts are asked to match each task statement in a job inventory for a given specialty to an item in that specialty's STS. Occupational survey analysts can then evaluate the STS in three ways.

An STS item is first looked at in terms of what percentage of the personnel report using tasks identified with that item. This evaluation may be by skill level, time in service, (rank or other identifiable grouping). Although percent of members performing is not a criteria for inclusion or deletion of an item from the STS, a criteria does exist for inclusion or deletion of items taught in formal resident training. ATC Regulation 55-22, Occupational Survey Program, sets a minimum criteria to be applied in design or revision of basic resident training courses of 30 percent of first job/first enlistment airmen performing any given task in a job inventory. For tasks where the probability of performance by this group is less than 30 percent, resident training is not recommended unless such training can be justified (as for safety reasons). Therefore, all subject matter areas covered in a resident training course will be listed in the STS,. but all STS items need not be covered by formal resident training.

The fact that a task statement elicits a high response rate, however, does not mean that the task must be listed in the STS. Analysts next look at each task in relation to its task learning difficulty rating. Task learning difficulty is a secondary factor routinely collected during the occupational survey administration. Briefly, experienced senior airmen in the specialty being surveyed are asked to rate each task in the job inventory based on the time it would normally take an airman in the specialty to learn to do the task. Ratings are from one (very small amount of time) to nine (very large amount of time). Combined ratings are then standardized so that a rating of five represents an average amount of time spent to learn a task. The development and validation of task learning difficulty is explained in more detail by Mial and Christel (1974). By comparing task difficulty rating to the task statements and the percent of members performing the tasks, it is easier to see just what is required in terms of OJT and/or formal training. Obviously tasks with low difficulty ratings may require little or no formal training, and for that reason they may also have no need for being listed in the STS.

The third way of evaluating the STS is through the use of the training emphasis rating. As reported by Ruck, Thompson, and Thomson (1978), training emphasis is a secondary factor collected in the manner of task learning difficulty ratings. The difference is that subject matter specialists are asked to rate each task statement on a nine point scare (extremely litte to extremely heavy) in terms of whether formal training (school or OJT) should be emphasized for first enlistment airmen. This data can be used to cross reference tasks with high response rates or high task difficulty ratings in order to justify formal training and inclusion in the STS. They may also justify formal training or inclusion in the STS of inventory tasks with low response rates if subject matter experts in the field believe them to be important.

What of tasks with low responses and low task learing difficulty or training emphasis rating, but are unique and important to a specific agency or unit within the specialty population? The Air Force has provided for this situation through the use of the Air Force Form 797, Job Proficiency Guide (JPG). The JPG is used to document training required of an individual above the normal requirements for a given specialty. The JPG is prepared by the agency requiring

additional training and is attached to the STS by the unit providing the training. In this manner, the STS remains a general document listing only training required by most airmen assigned to the specialty. Thus, unnecessary training is precluded, but the capability to identify and document additional requirements is available when needed. A full discussion of the JPG can be found in Air Force Regulation 50-23, On-The-Job-Training.

In order to effectively utilize the survey data, a computer product developed by Thew and Weissmuller (1978), the modular factor printout, is being used by occupational analysts and provided to training managers. As shown in Figure 2, the tasks in the job inventory are clustered under their corresponding STS item. The training emphasis rating, task learning difficulty rating, and the percent of members responding by skill level are displayed to the right of each task statement. In this single printout, all the survey data used to make a training decision are displayed for each task. Although the printout is time consuming and expensive to produce, the data is presented in a manner that is comprehensive and understood by decision makers not generally accustomed to using computer generated products.

The impression should not be left that occupational survey data alone could be used to revise or develop training documents or formal training programs, rather the data is another tool for training managers and subject matter experts to use and weigh in relationship to other factors. The quality and completeness of the job inventory, and the timeliness of the survey bear on the usefullness of the data. Training costs, system procurement, programmed changes in personnel utilization, and equipment modification all must be considered when determining whether tasks can or should be trained. Job analysis is just a part of the Instructional System Development (ISD) model used by the Air Force for designing training programs.

The point to be made is that unlike other methods of employing job analysis to define and design training, the Air Force method relies on a cross-check approach of evaluation of an established training outline (STS) encompassing both formal resident training and OJT, rather than starting from the beginning each time training is reviewed. This method allows for use of occupational data to be applied to the identification of training needs beyond the classroom without creating redundancy of training, because both the technical training centers and field trainers are following and documenting training on the same outline.

How successful has the Air Force been in developing effective training programs while reducing costs? Figures from just one training center reported by Meece (1979) reveals that savings have been significant and course graduates are reporting to the field better prepared to perform their assigned first job. While the use of occupational survey data to revise and develop STSs cannot be credited for all of the savings, reports from training managers indicated that such savings would never have been achieved had the job survey data not been employed. As a result, Headquarters ATC, Technical Training, has formalized a system of scheduling workshops to coincide with the completion of occupational survey reports on some career specialties needing a review of training requirements. This system has been included in both Air Force and ATC regulations to institutionalize the systems. The combination of an integrated scheduling of workshops and improvements of occupational survey data for use by curriculum developers and workshop participants suggests that the Air Force will continue to enhance its management of our very critial training dollars.

BIBLIOGRAPHY

AFR 8-13, Air Force Specialty Training Standards; Washington D.C. Hq AF, June 1974.

AFR 50-23, On-The-Job-Training, Washington D.C., HQ AF, 29 May 1979.

ATCR 52-22, Occupational Survey Program; Randolph AFB, HQ ATC; 22 August 1978.

Davis, D.D.; "Data Base to Determination of Training Content: A Managable Solution"; Symposium Papers (20th Annual Conference of the Military Testing Association, Oklahoma City, Oklahoma; 30 October - 3 November 1978, Vol 1, 28-50).

Flournoy, D.B.; Air Command and Staff College Student Research Report"; An Evaluation of the Air Force Specialty Training Standard (STS)"; Maxwell AFB, Alabama, 1978, 055-78.

Keeth, J.B.; "The USAF Occupational Survey Program"; Symposium Paper (19th Annual Military Testing Association Convention, San Antonio, Texas, 17-21 October 1977) Lackland Air Force Base Texas; USAF Occupational Measurement Center, 77-14, December 1977, 12-16.

Letter, Subject: Expanded Course Scrubdown, 1 Nov 77 from General John W. Roberts, CC ATC to all ATC Technical Training Center Commanders.

Meese, C.C., "Training Management and Utilization Workshops (Scrubdowns)"; Report to Commander; Keesler Technical Training Center, Keesler AFB, Mississippi; January 1979

Mial, R.P., Christel, R.E.; "The Determination of Training Priority for Vocational Tasks"; Preceedings, Psychology in the Air Force Symposium; USAF Academy, Colorado April 1974.

Morsh, J.E.: "Job Analysis In the United States Air Force"; Personnel Psychology; 1964; 17, 7-17.

Ruck, H.W., Thompson, N.A., Thomson D.C.; "The Collections and Prediction of Training Emphasis Ratings for Curriculum Development"; Symposium Papers (20th Annual Conference of the Military Testing Association, Oklahoma City, Oklahoma; 30 October - 3 November 1978, Vol 1, 242-257).

Thew, M.C., Weissmuller, J.J.; "CODAP' A New Modular Approach to Occupational Analysis"; Symposium Papers (20th Annual Conference of the Military Testing Association, Oklahoma City, Oklahoma; 30 October-3 November 1978, Vol 1, 362-371)

Turner, J.A.; "The USAF Occupational Survey Program - An Aid to Force Management"; Symposium Papers (6th Annual Psychology in the DOD Symposium, USAF Academy, Colorado, 22 April 1978). Lackland Air Force Base, Texas; USAF Occupational Measurement Center Technical Note Series 78-01, April 1978, 1-4.

Figure 1

PROFICIENCY CODE KEY		
	SCALE VALUE	DEFINITION. The Individual
TASK PERFORMANCE LEVELS	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. May not meet local demands for speed or accuracy. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. Meets minimum local demands for speed and accuracy. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)
* TASK KNOWLEDGE LEVELS	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step by step procedures for doing the task. (PROCEDURES)
	c	Can explain why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, identify, and resolve problems about the task. (COMPLETE THEORY)
** SUBJECT KNOWLEDGE LEVELS	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can explain relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)

- EXPLANATIONS -

* A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b)

** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks.

– This mark is used alone instead of a scale value to show that no proficiency training is provided in the course, or that no proficiency is required at this skill level.

X This mark is used alone in course columns to show that training is not given due to limitations in resources.

Figure 2

906XO - Medical Administrative STS Analysis FCPRT1 PAGE 12

D	TSK	TITLES	TNG EMP *D*	TSK DIF (F)	906 30 (M)	1ST JOB (M)	906 50 (M)
N	432	Annotate Alpha Rosters with incoming or outgoing personnel information	2.83	3.78	13.9	12.8	8.7
	086 16D.	Eligibility for Medical Care					
F	242	Determine Admission Elgibility	5.96	4.44	20.5	11.9	15.6
N	460	Verify Identification of Patients	5.17	3.99	37.3	35.3	20.7
G	283	Verify Eligibility of Air Force Reserve Admissions to Hospital	4.55	4.88	6.8	7.8	9.1
G	285	Verify Eligibility of Civil Service Employee Admission to the Hospital	4.53	5.00	6.3	7.3	8.0