WIPP DOCUMENTATION PLAN

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ABSTRACT

In support of the programs at the Waste Isolation Pilot Plant (WIPP), the Publications and Procedures Section developed a documentation plan that provides an integrated document hierarchy; further, this plan affords several unique features: 1) the format for procedures minimizes the writing responsibilities of the technical staff and maximizes use of the writing and editing staff; 2) review cycles have been structured to expedite the processing of documents; and 3) the numbers of documents needed to support the program have been appreciably reduced.

INTRODUCTION

As is readily apparent, many technical activities contribute to preparing the Waste Isolation Pilot Plant (WIPP) for receiving nuclear waste. Similarly, many innovations are also being introduced in the various administrative functions that support the technical efforts. One of these activities is the implementation of a specially designed plan that affords an integrated document hierarchy, minimizes the preparation time of documents, ensures their appropriate review, and minimizes the creation of superfluous documents.

The development of the WIPP Documentation Plan began when the Publications and Procedures Section was charged with a demanding assignment: "Minimize the writing responsibilities of the the technical staff." The intent was to avoid a common pitfall: in many facilities technical personnel are charged with writing so many procedures and manuals that they have little time to devote to their other professional responsibilities. Further, this problem could have been exacerbated by the newness of WIPP: if scientists typically spend more than 40% of their time writing (as has been documented in several surveys), what percent of their time would be spent writing in a facility such as WIPP where they had literally to create all the procedural and descriptive materials from scratch?

Accordingly, the documentation plan that was developed translated the single objective of minimizing the writing responsibilities of the technical staff into several distinct problems that could be addressed and remedied.

Document Hierarchy

From May 1984 through October 1985, an intense effort went into preparing a single planning document--the Operations Program Plan--to describe the overall management of the project[1]. This document, which provided narrative descriptions of each of the functional areas of the project, was therefore the logical choice to serve as the top tier document. Once this choice was made, the rest of the hierarchy was also determined by a logical evaluation of the types of documents needed.

Rather than assess the particular documentation needs of each of the various departments at WIPP, the Publications and Procedures Section began its work by asking a deceptively simple question: "Why does any program need documentation?" The question is deceptive because most managers assume that there is a predetermined, a priori need to have volumes of paper that document and redocument every aspect of one's daily life. This assumption has, through years of propagation, become legendary and almost a sacrosanct principle of doing business. We, as a first step, took it upon ourselves to reverse this course.

Our answer to the question, "Why does any program need documentation?" was also simple. There appear to be two reasons for documenting activities: 1) To provide descriptive explanations so as to let others understand the tenets and principles of a program, and 2) to provide an auditable trail that details the accountability the program has as regards enforcing safety and quality requirements, and ensuring responsible fiscal management.

This information we used to develop a straightforward hierarchy: The Operations Program Plan (OPP) would be the top of the pyramid; one step down would be manuals to describe the specifics of a particular program; at the bottom of the pyramid would be the procedures that detail, with step-by-step clarity, those activities that are safety-related and/or quality-related, or that describe aspects of fiscal management.

Not only did this simplification let the Publications and Procedures Section proceed to prescribing appropriate formats for these documents; it also produced a side benefit. While originally many departments had prepared elaborate plans to show the multitude of documents they were determined to produce, many groups reshaped their plans after developing explanations of why documents were written. Some organizations astutely determined that the descriptive chapter in the OPP suitably explained their operations; others determined that while further elaboration was warranted and therefore they would write manuals, they did not need protracted procedures. Others decided that the OPP was suitably descriptive but that certain activities warranted procedures; for these groups the only additional writing to be done was in preparing the necessary procedures. Accordingly, whereas proliferation is both the battle cry and the hue-and-cry indigenous to many facilities, at WIPP the Publications and Procedures group was taking an active role in declaring war on the evils of excessive paperwork.

Having already made a significant inroad toward reducing the writing responsibilities of the technical staff by reducing the number of documents to be written, the editing organization next turned its attention to those documents that remained to be written. Here, too, there was marked room for improvement over the typical and accepted ways of doing business.

Procedure Formats

As noted, the OPP had already been written by this time, so its format had been established. Manuals, the next step down on the hierarchy, also came with a readymade organization essentially the same as all technical reports (i.e., introduction, body, conclusion); this basic pattern was then modified to fit the dictates of the particular program being described. So, at this point, we had a simple hierarchy with two out of three document types fairly familiar to the authors and users. The last document type, however, was where we felt we could make the greatest reductions in time and effort--both for user and writer.

As we had done in our initial analysis, we returned to the basic questions about documentation. In this instance, we didn't ask why we had procedures since that had already been answered; rather, we asked how the procedures could best accomplish their purpose of detailing specifically how an activity was accomplished. Coupled with this, we asked questions about who was the user and who was the author. Again, though the exercise, on the surface, seems quite puerile, it produced some valuable results.

The three questions about the document (how to help it do its job, who wrote it, and who used it) led to the design of our procedures. First of all we determined that the best way for a procedure to do its job was to avoid the confusion inherent in having one document attempt to serve several (often contradictory) purposes; that is, if you want to tell someone how to do something, you should avoid, to the degree reasonably possible, introducing so much peripheral matter that the important and vital information is obscured. In other words, it was necessary to enforce the hierarchy: if you want to explain a process in a procedural way, just show the process.

Consequently, we streamlined the procedure. Information often placed in procedures (e.g., responsibility sections, related data, etc.) was excluded. In total, there were to be only three sections to each procedure:

I. Front matter: consisting of

   1. Scope--a brief statement defining the limitations of the procedure

   2. Definitions--defining only those terms not readily understood by potential procedure users

   3. References--supporting documents referenced in the procedure

   4. General--an optional statement referring to the procedure as a whole.

II. Procedure--the sequential, step-by-step actions to be completed.

III. Attachments--illustrative material, optional information.

Next, taking into account the users, the authors, and our original charge to minimize the writing time of the technical staff, we adjusted the form and preparation of the "procedures" section of the procedure to ensure we had a procedure that was easy to use, and easy and quick to write. The way this was accomplished was by reviewing how procedures are most typically written, analyzing the problems with those approaches, and then offering an alternative.

As our analysis showed, the complications with procedures resulted from two major difficulties: 1) Technical people were writing principally for operating staff. This meant that the procedures often were cumbersome because the technical people added material of technical interest but not necessarily of value to the person doing the job. 2) Technical people think in terms of logical (here meaning sequential) actions; in contrast, procedures that entail lengthy narrative descriptions of technical processes require the technical people to change their inherent mindsets to switch from what might be deemed technical writing to expository writing; this maneuvering to become "literary" in their descriptions results in poorer accuracy in describing the process, inclusion of incidental or tangential information, a resentment of the writing chore, and--when summed up--an inordinate amount of technical personnel time devoted to the task of writing procedures.

Part of the difficulty just discussed was handled by the streamlining. The second major advance resulted from our designing the "procedure" section of the procedure to accommodate the author's disposition, the user's needs, and the editor's expertise.

To allow the writer and reader the greatest benefit, we decided to have the technical staff communicate their ideas in a form less foreign to them than lengthy, narrative descriptions. The technical staff would supply the scope, the definitions, and the references as usual. The procedure section, however, was now to be submitted as a simple logic flow diagram and to ensure the operators could understand the flow diagram, we prescribed that only five geometric shapes be used to communicate the actions: a rectangle for action, a diamond for decision, a triangle for reference or "go to" statement, an oval for absolutely necessary explanatory information, and a circle for warning (Fig. 1).

Not only did this reduce the writing time for technical staff, it also brought the editorial staff into a more active role in preparing procedures. Once the flow diagram is received from the technical staff, the editors review the diagram to ensure it is correct, in form and logic; then, using the diagram, the editors develop a split column "procedures" section (Fig. 2). The right-hand side is a narrative form of the procedure written solely by the editors and provides detailed descriptions in complete sentences, including complete names, form numbers, responsible parties, and cross-references. This right-hand side is intended primarily for use in the first encounter with the procedure, as in the

case of new employes, auditors, etc. The left-hand side of the page provides the flow diagram; where material is abbreviated, actions are explained in short phrases, and references are made in accepted acronyms. The intent here is that the more experienced operator can quickly skim through the procedure, garnering only the information needed to complete or verify a series of actions.

With these two measures, minimizing the number of documents to be produced and using logic flow diagrams for procedures, the Publications and Procedures Section greatly reduced the writing time required of technical staff. Yet, one further step was developed to reduce the writing time of technical staff. This last savings was in the area of document review cycles.

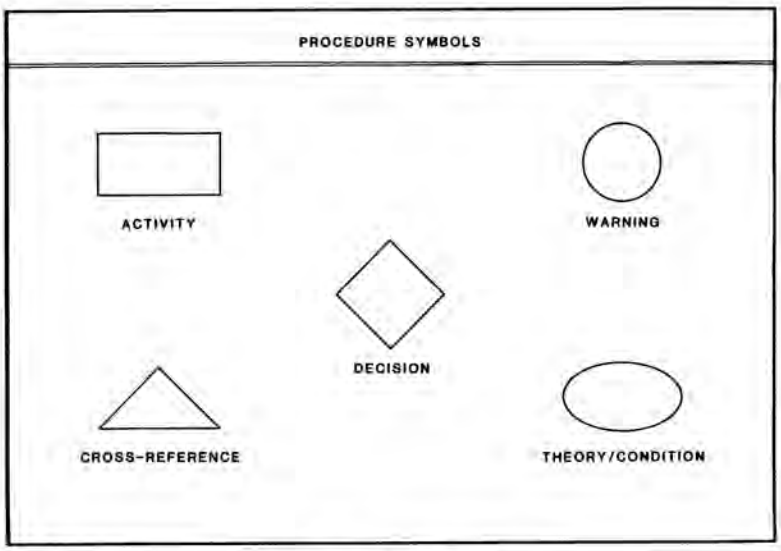

Fig. 1. Symbol Usage.

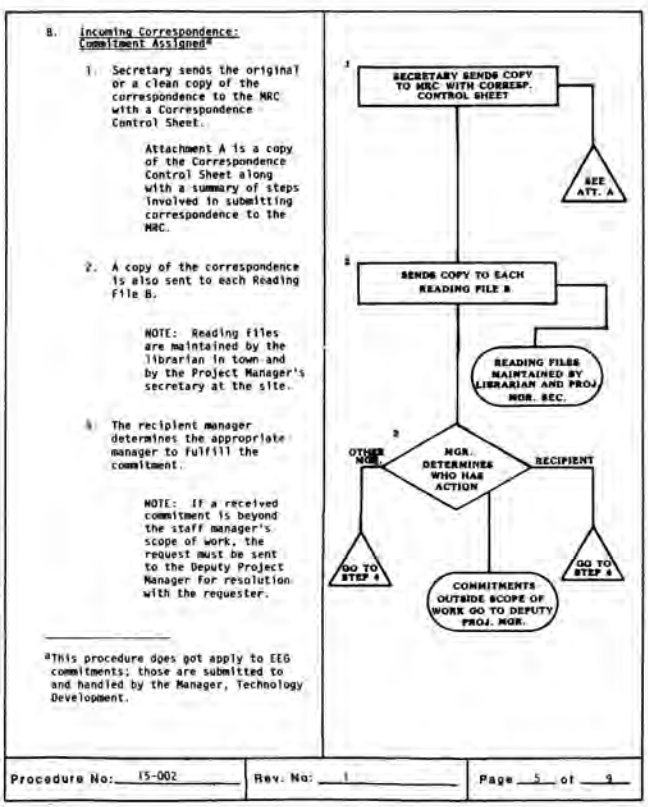

Fig. 2. Split Page Format.

Review Cycle

A corollary to the first practice we had reversed--the theory that each program should prepare excessive amounts of documentation--is the theory that everyone should read and approve these documents. Standard distribution sheets had been prepared that listed all managers on the project; characteristically if you authored a document, you simply stapled the distribution sheet to the document and sent out a copy for each manager's review. Ostensibly, this was an appropriate reaction: if you cannot tell who should get a document, it is better to err on the conservative side by having everybody review it.

The problem, as is evident, is that the perceived benefits are overridden by two problems: 1) Reviewers cannot be expected to provide thorough, intensive reviews of all documents; if the review is to be effective, the reviewer must be allowed to concentrate on documents that are of direct consequence to the reviewer's program. 2) The issuing organization is often tied up in seemingly interminable review cycles waiting for all the comments to be returned. In other words, the reviewer is overwhelmed; the author is frustrated.

As we interpreted it, this review problem also fit into our original charge of reducing writing time of technical personnel. Once again, the approach was to investigate the basic purpose of the activity. In this case, the answer was similarly straightforward. The reason for sending a document out for review was two-fold: 1) to gather information from personnel who might be able to improve on the program as developed; and 2) to inform other managers of your program so as to afford them information that might be of value when they in turn design certain components of their own programs. Given this answer,

the resolution was to limit the review cycle to just those organizations that are affected by or contributors to the program or process being described.

This was accomplished by developing a matrix of the existing departments. When a group prepared a document, they were to look on the matrix to determine if there were any mandatory reviews. In addition to the mandatory reviews (which like our criteria for procedures revolved around the questions of quality, safety, and financial responsibility), the organizations were to distribute the document to all other departments "affected" by the document. Here, the word "affected" carries a stipulated definition based on the reasons for the review: a department is "affected" if it has part of the franchised responsibility for the activity discussed or if it has programs that may have to be tailored to accommodate the program being described. It is particularly valuable to note that the matrix (Fig. 3) shows very few mandatory reviews, a total reverse from the previous operating principle that everybody reads, reviews, and comments on the document.

Additionally, focusing the reviewer's attention specifically on essential documents allowed us to improve the review comment sheets and thereby provide assurance that comments were addressed and resolved prior to final issuance of the document. While editorial remarks are made on a copy of the procedure itself, reviewers enter any substantive remarks on a separate review comment sheet. This sheet provides space for a description of the resolution reached by author and reviewer. Thus, for example, an author will often simply write "incorporated" in the resolution space. Or, the author will present the rationale for not adopting the reviewer's suggestion. At any rate, both author and reviewer signify their acceptance of the resolution by signing the cover sheet, whereon approval for the whole procedure is signified. Properly completing the review sheets provides a formal, verifiable statement to auditors that procedure review took place professionally and thoroughly. This resulted in documents of better quality that have auditable trails for review by Quality Assurance to certify the acceptability of the program.

CONCLUSION

As we learned in the development and implementation of the documentation plan at WIPP, the administrative personnel can make great contributions to improving the operations at a technical facility. Not only had we significantly reduced the writing efforts required of the technical staff, we had made several additional strides. These included the better integration of technical and writing staffs, the improvement of the documents being prepared at WIPP, and a better understanding of the role played by documentation in preparing a facility for operation. We as a publications organization also gained two immeasurable benefits from this continuing exercise: 1) we have gained a real pride in the work we do at WIPP; we have proven ourselves an indispensable part of the team effort being made to make WIPP a model facility; and 2) we have earned the respect of the technical community; unlike at other facilities where administrative personnel are the passive recipients of work passed along by technical personnel, at WIPP we have an active role in shaping the processes, in working on the front line with technical staff to ensure that the job is not only done, but--as is Westinghouse's corporate motto--that the job is done right the first time.

REFERENCES

1. P. A. MISKIMIN, S. C. COSSEL, and D. L. PLUNG, "WIPP Operations Planning--An Overview," Proceedings of Waste Management '85, Volume 1, pp. 75-79.

DEPARTMENT	PROCEDURES			PLANS			POLICY GUIDES
	QA Rel.	Safety Rel.	Other	QA Rel.	Safety Rel.	Other	
Human Resources	☆						C
Administration							C
Safety		C			C		C
Program Planning							C
Operations							C
Engineering & Construction							C
Technology Development							C
Controller							C
Quality Assurance	C			C			C
Joint Integration							C
Startup							C
Project Manager				A	A		A

C:CONCURRENCE A:APPROVAL

☆ A blank box indicates that the department reviews and concurs with the document if affected by it, as determined by the issuing department.

Fig. 3. Review Matrix.

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