



GUIDANCE NOTES ON

THE DEVELOPMENT OF PROCEDURES AND TECHNICAL MANUALS

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Foreword

Safety and environmental concerns demand an investment in time and energy to develop and implement accurate, effective instructional materials. Consistency is the key to efficiency, quality control, and safe operations. This consistency can come from the use of well-written administrative, regulatory, operating, emergency, maintenance, and routine duty procedures and technical manuals.

With requests from industry, and research done through the ABS Mariner Personnel Safety (MPS) project, ABS recognizes the need within the maritime industry (including ships and offshore installations) for guidance in developing procedures and technical manuals. The purpose of these Guidance Notes is to aid in aligning instructional material to safety and environmental considerations; revising existing documents for conformance to current practices, policies, and regulatory requirements; and implementing the new and/or updated documents into a safety program to enhance productivity and reduce accidents.

The guidance presented is recommendatory. Although ABS encourages owners, operators, and manufacturers to adopt these principles wherever feasible and applicable, compliance is not required. The intent is for technical documentation writers to tailor the information presented in these Guidance Notes to the needs and preferences of their particular organization.

These Guidance Notes become effective on the first day of the month of publication.

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SECTION 1 Introduction

1 General

Humans have a limited capacity to store information in short-term and working memory. Research suggests that humans can process in short-term or working memory about five to nine pieces of information at one time.

Working memory is that memory involved in directed conscious attention. For example, start-up operating instructions for the manual operation of a potable water system requires the operator to remember pumps, chemical levels, etc. For this reason, the maritime and other industries should not rely exclusively on an individual's memory to perform work-related tasks, especially those that are complex, hazardous, and have the potential to impact personnel safety, equipment, or the environment. Appropriately written and implemented instructional materials (procedures and technical manuals) can reduce the cognitive effort of personnel, especially the memory element of performing a task, thus aiding in reducing human errors.

1.1 Application

The principles and guidelines in these Guidance Notes apply to writers of maritime procedures and technical manuals who wish to further understand the document development process, the intent of, and the benefits derived from appropriate procedure and technical manual design, development, implementation, and life-cycle tracking.

For the purpose of brevity, the terms "procedures" and "technical manuals" are not explicitly mentioned throughout this document and are instead referred to as "instructional materials/documents". These umbrella terms include procedures, technical manuals, checklists, and/or any other instructional-type of material used to perform a specific task(s). These Guidance Notes can be considered applicable to all instructional documents in both paper and electronic format.

These Guidance Notes are intended to serve as a reference for maritime organizations when planning, developing, implementing, revising, and maintaining instructional materials. These Guidance Notes describe general concepts, provide design considerations, and offer content suggestions for instructional materials.

The goal of these Guidance Notes is for the writer to tailor the instructional material to their own unique needs and preferences, so long as the concepts of clarity, accuracy, and completeness are maintained while also promoting safety and efficiency.

1.2 Definitions for Instructional Materials

Administrative Procedure: Developed to meet an organization's goals, including planning, organizing, staffing, directing and motivating personnel, controlling quality, and budgeting.

Checklist: A list of actions or events to be noted, checked, or remembered, and when checked, verifies that the actions have been performed.

Emergency Procedure: A list of steps that describe required actions or tasks to be taken in the event of a failure of the equipment or system.

Human Error: Performance of humans that deviates from the desired performance. This definition is not a failure to perform as directed, but failure to perform as desired.

Instructional Material/Document: An umbrella term used to describe well-defined procedural documents, technical manuals, and/or any other written material that is intended for training or learning of tasks, processes, procedures, and systems. These terms also include instructional materials in any digital or electronic format.

Job Aid: Includes any device (whether in written, mechanical, electronic, or other form) that can be used by a person to facilitate the performance of a job or task. Job aids are often printed or visual summaries of key points or steps essential to the performance of a task.

Maintenance Procedure: A list of steps that describes how to perform a task required to maintain or repair an equipment item. It is also a documented standard to which the job or task should be performed.

Management of Change: A systematic program to assure that changes to a process are appropriately reviewed, and any hazards introduced by the change are identified, analyzed, and controlled prior to resuming operation.

Near Miss/Close Call: An event, or chain of events, that under slightly different circumstances could have resulted in an accident, injury, damage, or loss of personnel, equipment or the vessel.

Operating Procedure: Developed to include regularly recurring work processes.

Procedure: A fixed, step-by-step sequence of activities or course of action that have definite start and end points, and that must be followed in a specific order to correctly and safely perform a task.

Routine Duty Procedure: Developed for activities such as regular checks of gauges for indication of operating temperatures or pressures, checks for running (on/off) condition of equipment, and checks for unusual noises or vibrations.

Safe Operating Procedure: Those that are directed specifically towards the safe use of equipment or processes.

Technical Manual: A well-defined document containing procedures on operation, handling, maintenance, and repair.

Short-Term Memory: The mechanism for not only holding a limited amount of information in our consciousness in an active state but also readily available for a short period of time.

Technical Manual: A well-defined set of instructions that have a specific goal to be accomplished, such as installation, operation, usage, maintenance, and training for the effective use of equipment, machinery, or deployment of processes and systems.

Working Memory: The execution and attention aspect of short-term memory involved in the integration, processing, disposal, and retrieval of information.

2 Definition of a Procedure

Procedures are a specified series of actions or operations leading to an outcome within the operation of a process or system. Procedures are detailed lists of steps describing how to perform various tasks, and as a result, they represent the quality to which the tasks should be performed. Procedures explain what is expected and required of a person when they perform a specific task.

Procedures may range from detailed guidance, to step-by-step instructions, to job aids, or short checklists. In order to determine the level of detail needed in a procedure, there are several factors to consider, namely the significance of error, the complexity of the task, how often the task is performed, as well as the knowledge, skills, and abilities of the user.

Job aids can reduce the amount of decision-making required and decrease the need to memorize key points of the task. Job aids include any device that can be used by a person to facilitate the performance of a job or task. Job aids are often printed or visual summaries of key points or steps essential to the performance of a task. They assist by directing, guiding, and informing people. Some formats for job aids can be in the form of checklists, worksheets, decision tables, algorithms, etc. (see Appendix 4, “Examples of Instructional Materials”).

2.1 Compliance with Standards

It is important to note that some documented procedures must be prepared to comply with particular standards published by the International Organization for Standardization (ISO). For example, ISO 9001, this document specifies requirements for maintaining effective quality assurance systems for manufacturing and service industries. Additionally, the International Maritime Organization (IMO) Maritime Safety Committee and other regulatory bodies can make amendments to older editions of specific procedural documents that are already in place. In a June 2013 meeting, there were amendments to the 1979, 1989, and 2009 editions of the MODU Code, which now require that specific procedures are developed for entry into enclosed spaces. This example reflects the importance, for the writers of instructional materials, to continuously monitor changes or amendments in industry standards.

3 Definition of a Technical Manual

A technical manual is a well-defined document that explains the means for operating, maintaining, supporting or installing a machine, process, system, or piece of equipment. As a result, they represent the quality to which these various tasks should be performed and explain what is expected and required of a person when they perform a specific task.

Compared to operating or maintenance procedures, technical manuals generally guide integration and installation of equipment in to the processes of a larger system. They also guide detailed, complex, and infrequent maintenance activities such as extensive overhaul or update/replacement of subsystems/components of the larger device.

Technical manuals also provide much of the technical information required to be incorporated into a company's operating, logistics, maintenance and administrative procedures. These technical concerns include the following types of activities: operating tolerances, specifications for consumables, inspection and maintenance requirements, and training requirements.

They are generally much more detailed than procedures. Thus, in order to determine the level of detail needed in a manual, there are several factors to consider, namely the significance of error, the complexity of the task, how often the task is performed, as well as the knowledge, skills, and abilities of the user.

4 Importance of Instructional Materials

Instructional materials represent the link among administration personnel, management, manufacturers, supervisors, and the personnel who perform the various tasks described in these documents. When personnel perform their work in accordance with instructional materials, they implement the plans, agreements, and policies incorporated in the documents and required by management and regulators.

5 Influencing Compliance and Performance

Human performance (e.g., safe, efficient, and reliable task performance) can be monitored and influenced. An inadequate level of human performance can adversely impact operations and safety. The primary objective for influencing compliance with instructional materials and performance is the reduction of errors. Properly developed materials can influence human performance by reducing variation in work performance and facilitating compliance with the requirements of the documents. This is accomplished by documenting standard work processes in instructional materials.

Human error can lead to near misses or minor losses, escalating up to major accidents. Inappropriate and undesirable decisions or behaviors can increase the likelihood of a loss.

When developing instructional materials, it is important to focus on reducing the number of decisions that people have to make, as well as reducing risk and memory recall requirements.

Instructional materials can reliably carry information concerning decision rules (e.g., "Vent steam when temperature is reduced to 260°F"). Risk perceptions can be mitigated via the use of danger, warning, and caution labeling and signage. Instructional documents can also aid in memory requirements by listing steps and their particulars, directing the when, where, how, why, and what of instructional steps, and indicate any factors related to task timing.

6 Contents of these Guidance Notes

These Guidance Notes focus on the process for developing and maintaining new and existing instructional materials. The Guidance Notes Sections are as follows:

- Section 2 – The Role of Instructional Materials
- Section 3 – Writing Instructional Materials
- Section 4 – Graphics in Instructional Materials
- Section 5 – Managing Instructional Materials
- Section 6 – Verifying, Validating, Approving, Certifying, and Implementing Instructional Materials

Appendices

- 1 Checklist for the Preparation of Instructional Materials
- 2 Example Constrained Word List and Constrained Language List
- 3 Analysis Techniques
- 4 Examples of Instructional Materials
- 5 References



SECTION 2 The Role of Instructional Materials

1 General

The development and proper use of instructional materials are integral parts of a successful quality system because they provide people with the information needed to perform tasks appropriately, efficiently, and safely.

1.1 Definitions

Deviation: Any action or inaction that is outside the established safe tolerances, which can include exceeding a safe upper or lower limit, skipping a safety-critical step in a procedure, or performing a step or sequence of steps out of order or in an unsafe manner.

Operating Limits: The boundaries or tolerances in which a system is at safe operating conditions.

1.2 Limits of Written Materials Relating to Maritime Environments

It is not possible to create a set of instructions that perfectly address every situation. There are numerous operational and environmental contexts whereby an onboard procedure could be implemented as specified, implemented in a different way, or not implemented at all due to safety or environmental concerns.

The standards and regulations of the maritime industry (shipping and offshore) can become very complex, and adhering to all the various navigation and conning rules may become difficult to satisfy. As an example, consider this statement from the International Regulations for Preventing Collisions at Sea (COLREGS) by Rule 2, RESPONSIBILITY:

- “(a) *Nothing in these Rules shall exonerate any vessel, or the owner, master, or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.*
- (b) *In construing and complying with these Rules, due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from these Rules necessary to avoid immediate danger.”*

The above can also be applied to instructions and guidance expressed in instructional materials, where the ultimate goal is safe and efficient operations. “Directed performance” demands rigid compliance with the procedures. In contrast, “desired performance” should produce safe and efficient job performance. Within specific contexts, “directed performance” could be deemed unsafe by personnel and therefore application of “desired performance” would allow personnel to adapt to the situation and perform the task in a safe manner according to the specific situation.

2 Purpose of Instructional Materials

The purpose of instructional materials is to provide personnel with the information necessary to perform a task safely, efficiently, and uniformly, so that each person performs the same task the same way with the same result. The more narrow function of individual, task-specific instructions is discussed in Section 3, “Writing Instructional Documents”.

Where applicable, instructional materials should provide direction on how to safely start, operate, and shut down equipment, while at the same time clearly specify when an emergency shutdown must be executed. Well-designed and well-written documents incorporate all safety issues related to a particular task, and therefore, maximize safe performance each and every time the task is performed due to the uniformity element built into the documents. This uniformity element includes the use of Dangers, Warnings, and Cautions in procedures to keep personnel aware of the safety issues related to the task being performed. For further details on where to place them in an instructional document, see Section 3, Table 1, “Usage of Signal Words”.

3 Use of Instructional Materials

When operations are recognized as being safety critical, involve lengthy task sequences beyond a reliable memory limit, are highly complex, or involve the presentation of complex information, there is a need for an instructional document. These tasks can involve normal operations, non-routine or infrequent tasks, low- to high-risk tasks, and situations where a task requires multiple people. When multiple people are required, the document should define their roles and responsibilities.

Tasks described in instructional materials should keep in mind the knowledge, skills, and abilities of the personnel. When a qualified person is required to successfully perform a task consistently, especially one that challenges memory, an instructional document is needed. Tasks that are performed solely from memory can lead to unpredictable and unsafe outcomes.

Instructional materials are also needed to:

- Satisfy regulatory requirements
- Satisfy ISO standard requirements if certified by ISO
- Respond to specific safety incidents
- Respond to specific process loss events.

4 Concerns to Address in Instructional Materials

The concerns discussed in the following Paragraphs should be addressed in instructional documents, depending on the specific task, the workplace environment, and the associated risk involved in task performance.

Well-developed materials describe in sufficient detail the hazards, the tools required, the necessary protective equipment, and the specific control devices so that people are aware of potential hazards. In doing so, they can verify that controls are operational and confirm that the equipment responds as expected. If the system does not respond as expected, well-developed instructional materials include troubleshooting information and necessary actions when and where required.

4.1 High-Level Concerns

The list below displays some common high-level concerns that should be addressed in instructional materials:

- What are the specific tasks required of personnel to operate and maintain their equipment?
- Who are the required operating personnel and who are the required maintenance personnel?
- What will be the operating environment?
- What types of human error can be anticipated and what are the possible consequences of those errors?
- What are the safety concerns?

4.2 Safe Operating Limits

Where applicable, instructional materials should describe safe operating limits that are generally set for critical process parameters such as; pressure level, temperature, flow, electrical power, etc., and conditions based on a combination of equipment design limits and the dynamics of the system. Safe operating limits are usually specified when the system response may be so severe that continued operation is inadvisable due to associated risks. Instructional documents related to these types of system responses should include clear, accurate instructions to respond to the situation.

For each safe operating limit, the potential consequence of exceeding the limit should be included in the document, along with the steps to avoid deviation or return to a safe condition if an excursion outside of the safe operating limit occurs.

5 Types of Instructional Materials

There are many types of instructional materials used in the maritime industry which include many procedural and technical documents.

Day-to-day operating categories for instructional materials generally include:

- Administrative (e.g., route or passage planning)
- Operating/Bridge, Engineering (e.g., watch turn-over, pilot briefings, engine start-up/shut-down)
- Emergency (e.g., emergency escape)
- Routine Duty (e.g., temperature or pressures checks, walkdowns/walkthroughs)
- Alarm (e.g., man overboard)

Technical manuals can become permanent procedures or protocols of a company. The procedures, if developed further can become technical manuals. These documents generally guide the following:

- Integration and installation within the overall larger system
- Technical and operating limits
- Maintenance, test, and calibration schedules and requirements
- Major to minor overhauls
- Maintenance (e.g., routine maintenance tasks or repair maintenance tasks)
- Temporal tasks (e.g., conditional or infrequent operations)
- Commissioning
- Decommissioning

6 Management Oversight of Instructional Materials

Management should develop a policy or formal program that describes the process for developing, updating, and maintaining instructional materials. This policy should define the range of activities to be considered for the documents, and the general roles and responsibilities of persons concerned with the development and maintenance of these documents.

Management should be accountable for establishing a culture in which personnel willingly conform to the instructional materials. Management should also verify compliance with these documents by regularly observing their performance in the field (see Section 6, “Managing Instructional Documents”).



SECTION 3 Writing Instructional Materials

1 General

There are many steps in the development of instructional documents. Appendix 1, “Checklist for the Preparation of Instructional Materials”, provides an example checklist to follow when developing documents. The checklist outlines the development process from pre-development activities to managing documents in use.

Prior to the development of an instructional document, several tasks should be performed so that the need for a document can be assessed and the content identified and addressed.

Some considerations that precede document development include the following:

- Understanding when and where instructional materials are required
- Understanding goals and general concepts of a task(s)
- Fully understanding the process and its interrelationship with other processes (process mapping)
- Gathering relevant information and identifying which documents are needed
- Assessing current company and industry resources for best practices
- Assessing current industry standards, including regulatory requirements
- Determining the need for materials through a Needs Assessment
- Performing a Risk Assessment, Task Analysis, or Gap Analysis
- Determining design and layout of the document for ease of use and distribution (i.e., paper copies or interactive electronic versions)

For information regarding optional pre-document analysis techniques, including how to conduct a needs assessment or task analysis, see Appendix 3, “Analysis Techniques”.

1.1 Definitions

Action Word: A powerful verb that describes the effort used to complete a task

Active Voice: The subject of the sentence performs the action of the verb (e.g., Set up the test box on the power panelboard).

Caution: In the context of instructional materials, a statement that indicates a potentially hazardous situation that, if not avoided, may result in a minor or major injury. Cautions may be used to signify situations where property damages or a minor pollution problem are possible.

Clause: A group of words containing a subject and a verb usually forming part of a compound or complex sentence.

Constrained Word List: A list of preferred words and terms shown adjacent to corresponding non-preferred words and terms. (See Appendix 2)

Danger: A statement describing an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

Hazard and Operability Analysis (HAZOP): An analysis technique that uses special guidewords to prompt an experienced group of people to identify potential hazards or operability concerns relating to the operation of equipment or systems.

Maintenance: All activities necessary to keep equipment up to, or restored to, a specified level of performance.

Note: Information that helps to explain a process but may not be needed for task performance; background information that may have a role in supporting decision-making.

Personal Protective Equipment (PPE): Includes all clothing and other worn work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, hard hats, hearing protectors, gloves, respirators, aprons, and work boots.

Step: In the context of an instructional document, a command statement consisting of information that requires an action from a person. The command statement includes an action word (verb), the object of the action, and often the location where the action is performed.

Style: The manner in which the author chooses to write to his or her audience; this can make one document look different from another.

Style Guide: A document that describes and illustrates a prevailing, accepted, or authorized style.

Task: A necessary step which enhances or provides benefit to a process in some way; a job, step, or function within a process which leads to a desired output or result.

Usability: Convenience and practicability for use; ease with which information can be found and understood in a document.

User-Friendly: A user-focused information presentation style that makes complex information easy to access, read, use, and understand.

Validation: The assurance that a product, service, or system meets a set of design specifications based on the needs of the customer or client.

Verification: The evaluation of whether or not a product, service, or system complies with a regulation, requirement, specification, or imposed condition. This is often an external process.

Warning: A statement describing an abnormal situation where there is a possibility of injury to personnel and/or a major impact to the environment if the warning is not heeded.

2 Initiation of New Instructional Materials

The first step in initiating a new instructional document is the recognition of the need for one. Recognizing this need may result from:

- A Needs Assessment
- A Task Analysis
- Perception by people that a document is needed
- Result of a mishap that resulted in a loss of productivity or unsafe condition
- Addition of new equipment
- Implementation of new regulations
- Change in operating performance requirements

3 Goal Definition

The goal of the document should be to address the user's information needs. This should be clearly defined, documented, understood, and agreed upon by any people involved in the generation or revision of the document.

4 Management Approval to Proceed

Creation/revision of instructional materials may require approval. Management responsibilities in document development may include:

- Approving the creation of a new document
- Requiring that instructional documents complement each other across the organization by maintaining a consistent approach to document development
- Reviewing and approving proposed new instructional documents to verify the scope and intended content are in agreement with existing documentation and management philosophy
- Requiring the initiator of the instructional material to justify its need

For additional management-related information, see Section 6, “Managing Instructional Documents”.

5 Information Gathering

Generally, information needs to be collected and processed to produce a final document that contains the technically relevant and necessary information to perform the task(s). This information is usually collected by a group of people, including individuals considered to be subject matter experts (SMEs) and also those who are users of the document brought together for the purpose of developing the instructional materials. The information gathered is considered source material or supporting documentation.

5.1 Subject Matter Experts (SME)

A subject matter expert (SME) is an individual with a high level of knowledge in a particular job discipline or operation. They may come from inside or outside of the organization. They can assist the document writer in defining complex processes and verifying and validating instructions during development.

5.2 Source/Supporting Documentation

Resource materials and other supporting documents are required to develop instructional materials. Often by the time document development begins, drawings and other technical documentation have already been generated and should be accumulated. Some of these resource materials are listed below:

- Related Vendor Documentation
- Related Drawings
- Relevant Regulatory Documents
- Company Policy Documents

5.3 Writing to a Specific Audience

An important consideration in planning, writing, reviewing, and revising instructional materials is to know who the ‘end user’ will be; who will be reading and performing the document’s steps. Some broad categories of audiences include:

- *Non-specialists:* Those with the least technical knowledge
- *Technicians/Operators:* Those who operate, maintain, and repair equipment
- *Experts:* Those who have in-depth knowledge of the theory and operation of the equipment
- *Executives:* Those who make business, economic, administrative, and other decisions

For example, if technicians are the user, the document should be directed to technicians only. Generic information can be directed to multiple audiences, but technical information should be directed to a specific audience.

Writers should identify the person expected to perform the individual steps, such as “Console Operator” and “Crane Operator.” This is necessary so that people understand which steps they are responsible for from the start to finish of a process or task.

Although English can be considered the universal language to be used at sea, for many people, English is a second language and may pose difficulties when instructional materials are developed only in English. It is appropriate for instructional materials to be translated into the native languages of the users provided the documents go through a verification and validation that the intent of the instruction is complete, correct, and appropriate. See Appendix 4, “Examples of Instructional Materials”, for sample procedural steps that have been translated from one language to another.

6 Effective Presentation of Material

Documents that are too long, too detailed, irrelevant, disorganized, poorly explained, or difficult to access can lead to inefficiency and higher error rates, possibly resulting in damage to equipment and/or injury to personnel. To help avoid this, a systematic approach can or should be used to present the information. This is outlined in the text below.

A systematic approach to developing instructional material is recommended to:

- Promote a thorough-document development process
- Meet the user’s needs
- Meet the needs of the Company
- Effectively present the contents of the document

A systematic approach used by writers should include the following elements:

- *Analysis* – Assessing compliance with regulatory and company requirements
- *Design* – Includes designing implementation plans, and identifying both required and needed materials
- *Development* – Includes the actual development of instructions and related training information
- *Consultation* – Includes gathering feedback regarding the effectiveness of the document with the end user
- *Evaluation* – Evaluating the effectiveness of the document and the document development approach
- *Implementation* – Includes implementing instructional materials in the field including training personnel on the process.

7 Enhancing Usability

The usability of instructional materials is a product of the information they present, the ease in which the information can be located and understood, word clarity, step clarity, aids to decision-making, etc. Usability is increased through user participation in the document development process, good design, and a document control system.

7.1 User Participation

It is important that users of the materials actively participate throughout the development process. The users who are most likely to benefit from the document development process are the experienced persons (e.g., subject matter experts). Their involvement should include developing a task list, determining document needs, selecting an appropriate format including input into the writing, reviewing, and maintenance of processes.

7.2 Instructional Material Effectiveness

Document effectiveness is the result of a good design and development process, with this practice adopted by the owner, operator, or manufacturer and repeated for each task requiring instructional material development.

7.3 Instructional Material Maintenance

Document development is a continuous process because instructional materials can become outdated and should be maintained regularly and consistently to reflect current practices or reflect current system design. For this reason, a control system should be implemented. All instructional materials in a system should be tracked, reviewed periodically, and disposed of when no longer relevant. (See Section 6, “Managing Instructional Documents”.)

8 Instructional Material Writing Elements

It is important that the lists of instructions in documents describing the process by which a task is completed are user intuitive. Technical manuals, for example are normally developed by a vendor or manufacturer and not developed “in-house”. These instructions are highly analogous to procedures and subsequently should follow the guidance in the following Paragraphs. The writing elements listed in the Paragraphs below will help writers develop effective instructional materials.

8.1 Instruction Number

The instruction number should be clearly identified, taking care to number instructions in the order in which they are intended to be performed. For instructions which are lengthy or complicated, they may need to be broken down into smaller steps, making sure these are also numbered appropriately. Consider the use of numbers, roman numerals, or letters for the different levels of instruction.

8.2 Clarity

Clarity is a prime consideration. To be effective, instructional materials should be perceived as clear and unambiguous. This requires the elimination of imprecise and confusing wording. It also requires that information be conveyed as explicitly as possible to remove any doubt as to what is required.

Note: It is important that documents remain comprehensible if being translated from one language to another language. Literal translations often can lead to instructions that do not make sense. See Appendix 4, “Examples of Instructional Materials”, for examples of documents that were translated from one language to another.

8.3 Brevity

Brevity involves using a limited amount of words to express an idea by being short and specific. Instructional documents should be constructed using brief sentences within individual steps, notes, cautions, and warnings. This involves reducing the number of words needed to express what is intended while maintaining clarity.

8.4 Use of Imperative (Command) Sentence Structure

The active voice and present verb tense should be used in conjunction with the imperative tone, which is a grammatical tone that expresses the will to influence the action of another person (i.e., a command). The instructional materials should be developed in a manner that directs the person to perform a specific action and not be suggestive.

Sentences are considered in the active voice when the subject of the sentence performs the action. The present tense of a verb (action word) shows that an action is taking place in the present.

Example: Set up the test box on the power panelboard.

8.5 User Friendliness/Usability

User friendliness is a user-focused information presentation style that makes complex information easy to access, read, use, and understand. This includes:

- Writing in a clear, concise, organized manner to reduce complexity and eliminate ambiguity
- Using an information presentation style that makes it easy for a user to find the necessary information (includes navigational aids for online documentation)
- Presenting the information in a style that is pleasing to the eye
- Sequencing the information logically
- Consistent ordering and placement of same-type information
- Including necessary information
- Delivering information in a format that meets the user’s need
- Making the information available to the user in a timely manner.

8.6 Technical Accuracy

Technical accuracy is near perfect conformity to fact or truth. If the instructional material is not technically accurate, the consequences can be severe. User expectation can be compromised and information may be lacking to perform the task(s) associated with the document in a safe and thorough manner.

9 Style Format Guidelines

Format refers to the shape, size, and general layout of a document. Layout refers to the arrangement of text and graphics on the various pages. The term “format” is often used to describe both style and format issues. The guidance in the following Paragraphs is effective for good instructional material development.

9.1 Font

Instructional documents should be developed using Sans Serif font to aid in visual clarity. Standard font size for instructional materials should be at least 12 pt.

9.2 Sentence Structure

9.2.1 Simple Sentences

Use simple sentence structures and exclude unnecessary descriptive words. Including too many nouns and adjectives detracts from the point being made and can make a simple piece of information unclear. Write instructional materials using simple command statements. This can be done by omitting unnecessary articles (the, an, a).

Example:

Prefer: **Close and secure manway hatch at second level. (12 pt. font)**

Not this: Close and secure the manway hatch at the second level (10.5 font)

9.2.2 Imperative Tone

Use imperative (command) sentences. Write instructional steps as action-oriented sentences, avoiding passive statements.

Example:

Prefer: **Open valve V-263.**

Not this: Valve V-263 is to be opened.

9.2.3 Avoiding Negative Sentences

Avoid negative sentences. Write instructional steps using positive statements.

Example:

Prefer: **Close enclosure door.**

Not this: Do not leave enclosure door open.

9.2.4 Keeping Thoughts Related

Avoid unrelated thoughts in one sentence. Use only one main thought or action per sentence.

Example:

Prefer: **Step 1. Verify tools have been removed.**

Step 2. Clean any spills.

**Step 3. Hold coordination meeting with involved personnel
 to discuss startup of compressor.**

Not this: Verify tools have been removed and any spills have been cleaned. Hold
 coordination meeting with involved personnel to discuss startup of compressor.

The third sentence in the above example should be in a separate step.