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GUIDE TO GOOD PRACTICES FOR LOGKEEPING

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Guide to Good Practices for Logkeeping

Page / Section	Change
p. 13 / Section 4.7	The references to DOE O 1324.5 and DOE O 1324.2A were updated to the current document—DOE G 1324.5B.
p. 14 / Section 4.8	This section was added.
p. 15 / Supplemental Resources	The references to DOE O 1324.2A, DOE O 1324.5, and DOE O 5000.3B were removed.
p. 15 / Supplemental Resources	The references to DOE G 1324.5B and DOE O 232.1A were added.
Concluding Material	The Preparing Activity was changed from NE-73 to EH-31.

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FOREWORD

The purpose of this Guide to Good Practices is to provide Department of Energy (DOE) contractors with information that can be used to validate and/or modify existing programs relative to Conduct of Operations. This Guide to Good Practices is part of a series of guides designed to enhance the guidelines set forth in DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities."

KEYWORDS

Log
Narrative Log
Round Sheet

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CONTENTS

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DEFINITIONS

Log (Narrative Log)	A chronological narrative record of events or functions.
Operations	The business activity of the facility and assigned personnel, e.g., controlling process equipment, producing/assembling components, performing tests, conducting experiments, processing information, etc.
Round Sheet (Round Inspection Sheet)	A type of data collection sheet used to record key equipment and system parameters (e.g., readings from instruments and gauges) and operating status (whether operating or shutdown for maintenance or repair) during equipment inspection tours (rounds).
Shift	The normal period of work for an individual or group, e.g., 8:00 a.m. to 5:00 p.m.

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GUIDE TO GOOD PRACTICES FOR LOGKEEPING

1. INTRODUCTION

This Guide to Good Practices is written to enhance understanding of, and provide direction for, Logkeeping, Chapter XI of Department of Energy (DOE) Order 5480.19, "Conduct of Operations Requirements for DOE Facilities." The practices in this guide should be considered when planning or reviewing logkeeping programs. Contractors are advised to adopt procedures that meet the intent of DOE Order 5480.19.

"Logkeeping" is an element of an effective Conduct of Operations program. The complexity and array of activities performed in DOE facilities dictate the need for a consistent logkeeping program to promote safe and efficient operations.

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2. OBJECTIVE

The objective and criteria are derived from DOE Order 5480.19. They are intended to aid each facility in meeting the intent of the order.

A logkeeping program is in place to provide an accurate history of facility operations and to aid in controlling equipment and system status.

Criteria:

a. Logs are established for key shift positions.

b. Written guidance defines the type, scope, and format of entries for each log.

c. Information is recorded in logs in a timely manner.

d. Log entries are precise, legible, and easily understood by the reader.

e. A standardized method is used for correcting errors in logs.

f. Supervisors periodically review logs for accuracy and adequacy.

g. Written guidance is provided for the disposition of completed logs.

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3. DISCUSSION

This guide has been prepared to aid facilities and individuals in maintaining logs, both as working documents used in the daily conduct of facility operations and as permanent legal records.

The guidelines of DOE Order 5480.19 identify logs as part of the overall program for controlling equipment and system status. Logs have many characteristics in common with round sheets, in that both provide information concerning the condition and status of equipment, and both are treated as legal records. Round sheets normally record only data collected from instruments. Logs are used to record an understandable account of the changes in the status of equipment, information obtained from sources in addition to instruments, and explanations for unusual data readings. This information makes logs a valuable tool in reconstructing events. If an unusual event occurs, its precursors and its progress can often be traced by analyzing logs, round sheets, and other records.

Logs provide a method for transferring information from one person or shift, to another, and are an important part of the operations turnover described in DOE Order 5480.19, Chapter XII. The transfer of information through logs enables current personnel to benefit from the experiences of previous operators of the equipment. The record of problems and attempted solutions may be reviewed whenever a new or similar problem occurs. The lessons learned can save time and effort in the search for solutions to current problems, and can help personnel avoid situations that caused problems in the past. The information contained in logs is also often used by engineers to track the performance of components or processes, by training personnel to provide examples for instruction, and by others requiring specific information concerning operations.

Logkeeping enhances the formality that must be a part of good operating practices and encourages individual accountability for operating decisions and actions. Logkeeping may also reduce paperwork by providing a single location and format for documenting operating activities.

DOE Order 5480.19 recommends logs for all key shift or process operator positions. Since logs are regarded as legal documents, they should meet high standards for accuracy and consistency. Facility guidelines should specify the positions required to maintain logs, the type of information to be recorded, and the requirements for format, timeliness, and legibility. Facility guidelines should also provide instructions for correcting errors in logs, periodic review of logs, and disposition of completed logs.

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4. GOOD PRACTICES

4.1 Establishing Operating Logs

Narrative logs should be an accurate history of facility operations. Logs should be established and maintained for all key positions (e.g., supervisors, control area operators, operators of isolated or remote equipment, etc.), including positions that are filled only on a part-time basis (e.g., test coordinator, wastewater treatment operator, or emergency equipment operator). When a narrative log is not maintained for a particular position, a narrative section should be provided on round sheets. If used, the narrative section should be maintained in accordance with the guidelines for logs. An example of a narrative log is shown in Appendix A.

Some facilities maintain additional logs for specific items of equipment (e.g., emergency generators). These logs provide an equipment history, and usually record activities and information relating to both operations and maintenance. Facilities or regulatory agencies may also require additional logs for specific processes (e.g., wastewater treatment and discharge). These additional logs should adhere to the requirements for narrative logs.

Facilities should develop written guidelines to ensure consistency in maintaining logs. The guidelines should address:

- Shift positions, processes, or equipment that require logs
- Personnel authorized to make entries in logs
- Standards for information to be recorded in logs
- Format requirements for logs and log entries
- Review requirements for logs
- Instructions for control of logs and disposition of completed logs.

The following sections of this guide provide information to assist facilities in the development of these guidelines.

4.2 Information to be Recorded

Each facility should provide written guidance defining the type and scope of information to be included in the logs. Log entries should be concise, yet contain sufficient information to allow accurate reconstruction of events. During emergencies and abnormal or unexpected events, logkeeping should not take precedence over controlling the facility; however, it is important that as much significant information as possible be included in the log. Entry of information into the log should not be regarded as a substitute for reporting to supervisors or other required reporting.

Log entries need not duplicate information recorded in other permanent records, such as round sheets or logs for other shift positions. However, any information that is of operational interest should be recorded in at least one facility log. If the operator is in doubt as to whether the information must be recorded, it is usually better to record. The following subsections identify categories of information that should be recorded in logs.

4.2.1 Changes in Facility or Equipment Status

Any change in the status or operating mode of equipment, systems, and processes (e.g., startup, shutdown, depressurizing, preheating, etc.) should be recorded in the log. The log should identify the specific procedure, or portion of a procedure, that is used. The initiation and completion of required surveillance or operational testing, and verification of status for safety-related equipment should also be recorded.

4.2.2 Abnormal Configurations

Occasionally a facility or system must be operated in an abnormal configuration to support maintenance or testing, or to respond to emergency conditions. Examples of abnormal configurations include: electrical or hose jumpers installed to bypass certain components or functions, blocked or locked-out safety channels or instrumentation, intentionally plugged drains, pinned or blocked check valves or other flow-control devices, or power supplied from an alternate source. When equipment is placed in an abnormal configuration, the reason (e.g., maintenance, testing, inoperability of normal equipment), authority for doing so (e.g., procedure, supervisor instruction), expected duration, and any special precautions should be recorded in the log.

4.2.3 Entering/Exiting Technical Safety Requirements

Any time facility conditions justify restricted operations in accordance with technical safety requirements, an entry to that effect should be made in the log. Another log entry, recording the elapsed time under technical safety requirement restriction, should be made when operations return to normal. Logging these events serves as an aid to the operator on shift, emphasizing the importance of the technical safety requirements, as well as documenting compliance with regulatory and safety limitations.

4.2.4 Out-of-Specification Readings

During operator rounds, the log can serve as a supplement to the round sheet by providing space for narrative comments on the condition and status of the equipment. Any out-of-specification reading or indication should be explained in the log. The log may also be used to record both objective and subjective observations regarding the condition of the equipment. Subjective observations, such as abnormal noise, vibration, odor, humidity, dust, temperature, etc., often enable qualified operators to identify problem precursors before process parameters exceed their permissible limits.

Log entries documenting abnormal observations or readings should include a description of the abnormal condition, the corrective actions and notifications made by the operator, and the cause of the condition, if it can be determined. Whether or not the abnormal condition can be corrected by the operator, the log entry will alert other operators to the potential problem. The log entry also preserves the operator's first-hand observations and reactions in the event a more comprehensive investigation is required. The sample log in Appendix A illustrates entries (Notes 5 and 8) for problems or out of specification conditions discovered by the operator.

4.2.5 Occurrence of Reportable Events

The occurrence of any event that is reportable outside the immediate operating group or shift should be recorded in the log. Log entries for reportable events should identify the person(s) notified, the time(s) of notification, and the actions taken by the operator to correct the event or condition. Events and conditions that are reportable to DOE are identified in DOE Order 232.1A, *Occurrence*

Reporting and Processing Operations Information. Other federal, state, and local agencies, or other site organizations may have additional reporting requirements.

4.2.6 Security Incidents

If a security incident occurs, or if there is reason to suspect that one has occurred, the individual should report the discovery in accordance with facility procedures. The circumstances of the discovery and any other information known about the incident should be recorded in the log. This information will be useful both for the security investigation of the incident and for determining the effect the incident may have had on operations. Security incidents may include discovery of improperly controlled classified material or documents, unauthorized or unknown persons in the area, and missing or damaged government property.

4.2.7 Shift/Personnel Relief

The assumption of responsibility for a shift position should be recorded in the log. This occurs at shift turnover, and may occur at other times during a shift. The log should identify the oncoming relief person by name, and should document the time of this person's acceptance of responsibility. Additional information describing the content and format of log entries for shift or personnel relief is given in Section 4.4.2, Initial Entry, and Section 4.4.4, Final Entry.

4.3 Timeliness of Recordings

Information should be recorded promptly in the log to ensure accuracy and completeness, but logkeeping should not take precedence over controlling or monitoring the facility. All events should be recorded in chronological order. If there is a delay between the time of the occurrence and recording it in the log, the log entry should include the actual time of the occurrence.

If an individual has failed to make a log entry at the proper time, and has since made additional entries, the late entry should be recorded in the next available space. The entry should indicate the actual time of the occurrence and should be identified as a late entry. A reference mark or notation may be placed in the margin, indicating that an entry has been omitted and is entered later in the log. The sample log in Appendix A (Note 11) includes an example of a late entry.

4.4 Legibility and Format

Maintaining logs as both working documents and permanent legal records requires precautions to preserve the physical integrity of the log. Logs should be maintained in a hard-bound ledger with numbered pages, or in a duplicate-type book with numbered pages. Waterproof black ink is recommended for all logkeeping.

Facilities should provide a method for identifying the persons who make entries in the log. One method is to list the printed name, signature, and initials of all persons making log entries. This may be done as part of the initial entry, or on a separate page or form maintained with the log.

Entries in the log should be easy for others to read and understand. All persons maintaining a log should ensure that their handwriting can be easily read by others. The language and style of writing should be in keeping with the intent of a narrative record of operation; language should be similar to the language one would use if describing the events to another operator or supervisor. Acronyms and abbreviations should come from an approved list.

Log entries should be reproducible on standard photocopy machines. If colored ink or highlight pens are used to draw attention to entries, a check should be performed to ensure that the log text is not obscured, either in the original or when copying.

Detailed instructions for log format should be contained in facility guidelines. The following subsections, and the example log entries in Appendix A, contain information that may be helpful in developing the facility guidelines.

4.4.1 General Format

It should be difficult or impossible to alter or add to the entries contained in the log. All lines on the page should be used, or marked in a manner that designates them as not used. As a good practice, lines should not be skipped between or within entries. Unruled spaces on the log page (e.g., the margin at the top of the page) should not be used for log entries.

The date should be recorded on each page. Entries should be formatted so that a person reading the log can determine at a glance the date and time of the entry.

4.4.2 Initial Entry

An initial entry should be made in the log at the beginning of each shift. The initial entry should be dated, should acknowledge the assumption of responsibility, and should contain the signature of the person assuming the shift position. Some facilities require a more detailed entry on a daily or per-shift basis summarizing plant conditions, equipment status, and work in progress. Examples of initial entries are shown in Appendix A (Notes 4 and 12).

4.4.3 Incomplete Tasks

The events recorded in the log may require followup action by the person keeping the log. If the action cannot be performed immediately, because of plant conditions or higher priority tasks, an entry should be made in the log to identify the task as incomplete. This is a way of reminding the person keeping the log, or the person who will fill the position on another shift, that the required action has not yet been performed. The sample log in Appendix A contains an entry identifying an action that must be completed on a later shift. (See entry for 05/15/92, 1910.)

4.4.4 Final Entry

The offgoing operator or supervisor should make a final log entry when relieved by another person or at the end of the shift. The final entry should indicate the name of the relief person (if the position is relieved through a turnover), and should be signed by the offgoing individual to authenticate the entries made during the shift. Examples of final log entries are contained in Appendix A (Note 3).

4.5 Correcting Errors

Facility guidelines should identify a standardized method for correcting errors in all operating records, including logs. The method of correction should not obscure or cover up the original entry; erasing or use of "white-out" should not be permitted. Treating the logs as legal records means that all entries must remain readable. If a correction is erroneously made, vital information could be destroyed unless the method of correction preserves the readability of the original text.

If the person keeping the log makes an error, a correction can be made by placing a single line through the incorrect information and writing the correct information in a nearby space.

The correction should be initialed and dated. An example of this method of correction is shown in Appendix A (Note 7).

When an error is discovered by someone other than the person who made the entry, the person making the discovery should not change the original entry. A new entry should be made in the log at the time of discovery to indicate that an error has been identified. The new entry should include the date and time of the incorrect entry and the incorrect information, and should clearly state the correct information. A note in the margin at the location of the incorrect entry, giving the date and time of the new entry, can be used to inform personnel that an error has been identified. Appendix A (Notes 10 and 13) contains an example of an entry to correct a previous error.

4.6 Log Reviews

At the beginning of each shift, the oncoming personnel should review the log entries since their last shift (or for a time period specified in facility guidelines). This review will familiarize personnel with recent changes in the status of equipment and bring them up to date on current processes or activities.

Supervisors should review the logs of subordinates during each shift. This review enables the supervisor to ensure that the entries are accurate and adequate. It also provides the supervisor with an additional perspective on the operation, since detailed equipment observations are more likely to be included in individual logs. The supervisor should document each log review. One method is to make an entry directly in the log at the time of review. Appendix A (Note 9) illustrates this.

Logs should also be made available for review by persons outside the operating organization. For example, system engineers and maintenance engineers can use operating logs to help detect potential problems in the equipment or procedures. Training personnel can use logs to develop instructive examples that accurately reflect facility operations or problems.

4.7 Storage of Completed Logs

Completed logs should be retained in or near the operating area for a sufficient time to permit review by operators returning to work after extended absences.

Each facility should establish written guidance for storing completed logs after they have been reviewed. Logs should be stored in a manner that will preserve them throughout the

expected life of the facility. The method of storage should allow for the logs to be readily retrieved if they are needed for reference. DOE-G-1324.5B, *Guide for Records Management*, contains additional guidelines for document control and disposition.

4.8 Computerized Logs

The handling and security of electronic data must be taken into consideration before initiating computerized logs. Facility procedures should discuss, in detail, the controls applicable to manual logging and computerized logkeeping. Provisions for revisions by supervisory staff (though retaining the original entry) should be feasible.

SUPPLEMENTAL RESOURCES

The following sources provide additional information pertaining to topics discussed in this Guide to Good Practices:

DOE-G-1324.5B, *Guide for Records Program.*

DOE Order 232.1A, *Occurrence Reporting and Processing of Operations Information*.

DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, Chapter XII, "Operations Turnover."

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APPENDIX A
EXAMPLE LOG ENTRIES

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EXAMPLE LOG ENTRIES

1			41
2	05/15/92	1415	Maintenance reported completion of work on Building 202 fire main.
		1428	Cleared tagout TO-92-098 for Building 202 fire main and began
			post-maintenance testing; Senior Mechanic William Jones monitored
			testing for maintenance.
		1445	Building 202 fire main post-maintenance testing completed
			satisfactorily; fire main placed in service; fire watch cancelled.
		1530	Inspected Building 202 fire main; no problems noted.
3		1559	Relieved by John A. Smith. *Tim Anderson*
4	05/15/92	1559	Assumed shift. *John A. Smith*
	1600-2400		Plant status as above.
	C Shift	1635	Rotated process supply water pumps. Status: Pump 1 - Standby,
			Pump 2 - On-line, Pump 3 - Standby.
		1655	Noticed potential safety problem outside south entrance to Building
			205. Runoff has eroded ground beside walk. Roped off area and
			informed Shift Supervisor. Completed work request WR-1038-92 to
			have hole filled.
6		1715	Relieved by Janet Black. *John A. Smith*
		1715	Assumed the shift. *Janet Black*
		1805	Process Control operator requested 500 gallons of de-ionized (DI) water.
			Notified Shift Supervisor and aligned DI Unit 2 to supply water to
			process.
		1850	Relieved by John A Smith. *Janet Black*
		1850	Assumed shift. *John A Smith*
		1910	Process Control operator reported delivery of 500 gallons DI water
7			completed. Informed Shift Supervisor. DI ~~Unit 3~~ JAS 05/15/92 Unit 2 is
			due for regeneration during midnight shift.
		2125	Informed by Shift Supervisor of National Weather Service severe
			thunderstorm watch in effect until 2230.
		2130	Checked that all doors and windows are secured in Building 202 and 204

(Numbers in left margin refer to notes on page A-5.)

	42		
8	05/15/92	2220	Packing leakage on process supply water Pump 2 is out-of-specification
			per round sheet. Leakage rate is approximately 3-5 gallons per minute
			(gpm), specification is 1 gpm. Cause appears to be packing failure.
			Notified Shift Supervisor and placed Pump 3 on-line. Took Pump 2 out
			of service and placed caution tag C-087-92. Pump 2 status is now
			Emergency Use Only.
9		2252	Reviewed log. *James Campbell*, Shift Supervisor.
10	Incorrect	2254	Maintenance reported work completed on process cooling water Pump 3.
	data, See	2315	Cleared caution tag C-087-92 and installed tagout TO-92-105 for process
	05/16/92,		supply water Pump 2.
11	0045. *TD*.	2345	LATE ENTRY: 2225 Wrote Work Request WR-1039-92 for process
			supply water Pump 2 and delivered to Shift Supervisor.
	05/16/92	0003	Relieved by Tony Diaz. *John A. Smith*
12	05/16/92	0003	Assumed shift. *Tony Diaz*
	0000-0800		Process Facility status: Normal operation; Water plant status: Operational
	B Shift		Process cooling water (PCW) system: Pump 1 - Tagged out
			Pump 2 - On line Pump 3 - Tagged out
			Process supply water (PSW) system; Pump 1 - Standby
			Pump 2 - Tagged out Pump 3 - On line
			Incomplete tasks: 05/15/92, 1910 - Regenerate DI Unit 2
13		0045	Incorrect entry identified. Entry of 05/15/92, 2254, states that
			Maintenance reported completion of work on PCW Pump 3. Work is still
			in progress on PCW Pump 3. Entry should read: "work completed on PCW
			Pump 1," as confirmed by Shift Supervisor.
		0120	Started regeneration of Deionizer Unit 2.
		0240	Maintenance reported completion of packing gland adjustment on PSW
			Pump 2. Verified that packing leakage is now 1 gpm.
		0255	Cleared tagout TO-92-105. Psw Pump 2 status is now Standby.

NOTES

1. No entries are made in unruled margin at the top of the page, nor in the partial line at the bottom of the page.

2. The date is entered at top of each page. Each entry is preceded by the time, using a 24-hour clock system.

3. The final entry at the completion of a shift identifies the relief and contains the signature of the person keeping the log.

4. The initial entry at the beginning of a shift contains the signature of the person keeping the log. The date, shift hours, and shift designation have been included in the margin.

5. The entry for a subjective observation or problem discovered by the operator identifies what the operator found, the actions taken, and the notifications made.

6. The entries for a relief during the shift meet the same requirements as entries at a scheduled shift turnover.

7. The person keeping the log made an error and corrected it by lining through the incorrect entry, writing the correct information, and initialing and dating the change.

8. A log entry provides additional information related to an out-of-specification reading or indication. The entry includes a description of the out-of-specification condition, the probable cause, notification(s) made by the operator, and the action(s) taken.

9. The supervisor reviewed the log and documented his review.

10. A margin notation draws attention to an error discovered by someone other than the individual who made the log entry. See Note 13.

11. A late entry, recorded out of proper time sequence, indicates the actual time of the occurrence.

12. This initial entry includes a status update and a listing of incomplete tasks carried forward from previous shift(s).

13. The person keeping the log found an error in an earlier entry made by another person. A new entry in the log identifies the incorrect information and corrects it. A notation was also made at the location of the incorrect entry.

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DOE-STD-1035-93

CONCLUDING MATERIAL

Review Activities:

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