Casting LCOs as Administrative Controls: Benefits, Drawbacks, and Implementation

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This paper was prepared for submittal to the
1997 Safety Analysis Workshop
Oakland, CA
June 9-13, 1997

May 1, 1997
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Casting LCOs as Administrative Controls: 
Benefits, Drawbacks, and Implementation

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Introduction

Most of the facilities of Lawrence Livermore National Laboratory (LLNL) can be classified as Hazard Category 3, or less, according to the U.S. Department of Energy (DOE) Standard 1027-92\(^1\). Because of the limited amount of radioactive material stored within it, a Category 3 facility is defined as being capable of only localized significant consequences; thus, the safety of the facility and its operating personnel can be ensured with operational controls that are less strict and rigid than would be the case with facilities requiring limiting conditions for operations (LCOs). Therefore, during a recent upgrade of safety analysis reports (SARs) for Hazardous Waste Management (HWM) facilities and the Materials Management Area (MMA), the LCOs prepared for the technical safety requirements (TSRs) were rewritten as administrative controls.

This paper presents the results, and some of the lessons learned, of this rewriting endeavor. The subject is discussed in the following sections:

- TSRs and associated background
- Preparation LCOs and administrative controls
- Benefits of recasting LCOs as administrative controls
- Drawbacks of recasting LCOs as administrative controls
- Implementation of the TSRs
- Recommendations

Technical Safety Requirements

Technical safety requirements (TSRs) are those requirements that define the conditions, boundaries, and administrative controls deemed necessary by the U.S. Department of Energy (DOE) and agreed to by the facility to ensure the safe operation of that facility. TSRs may include limiting conditions of operations (LCOs) and administrative controls.
Limiting Conditions of Operations

LCOs are that part of the TSR that defines the lowest functional capability or performance level of equipment required for continued safe operation of the facility. The accident analysis of a facility’s safety analysis report (SAR) determines which of the facility’s systems or conditions require an LCO. A properly written LCO will have a set of action statements and surveillance requirements. The format and content of the TSR LCO section have been explicitly and rigidly defined in DOE guidance documents.

Action statements allow deviations from the LCO for a limited period of time and under specific conditions. Action statements usually permit continued operation on a limited basis to allow the restoration of a system or component to its operable status (a TSR violation is avoided if the facility can be restored to its operable status within the allowed time period). Invoking an action statement when an LCO cannot be met is not a violation of the TSR. Surveillance requirements are basically tests of the operability of the system or component to ensure meeting the LCO. Operability is satisfied when the system or component is capable of fulfilling its intended safety function.

Administrative Controls

Administrative controls are defined as the provisions relating to the organization and management procedures, record-keeping, reviews, and audits necessary to ensure safe operation of a facility. The content of a TSR administrative control section apparently is determined by the reviewers of the regulatory body on a case-by-case basis whenever a facility TSR is reviewed and approved.

Only three items must be in the administrative controls section of the TSR document: 1) TSR deviation reporting, 2) facility staffing, and 3) criticality safety physical and administrative controls. Other items generally included in the administrative controls section include 1) contractor responsibility, 2) contractor organization, 3) procedures (actually, a procedure-preparation and procedure-change program), 4) programs, 5) operating support, 6) facility staff qualifications and training, 7) definition of operability, 8) TSR basis control, 9) reviews and audits, and 10) reporting requirements.

Recasting LCOs as Administrative Controls

Because of the content and format informality of the TSR administrative control sections, there is no apparent administrative reason that LCOs could be recast as administrative controls if it were desirable to move a particular LCO into the administrative control section. If the regulatory body, however, requires a certain item be specified as a LCO, then it should certainly be retained as such.

LCOs were originally developed to ensure that facilities operate within the bounds of the conditions assumed in the safety analyses. LCOs were applied to HWM’s radioactive-waste storage operations, specifically to radioactive-waste container limits, approved container types, treatment limits, fissile-material mass limits, and the TRU-waste storage array. LCOs were originally chosen as the appropriate form of control because they are higher-order controls, and contain action statements. At that time, it was thought that LCOs would afford a higher level of protection and
maintain HWM facilities within the bounds of LLNL’s safety envelope. However, as “necessary - and-sufficient” philosophies came into play at LLNL, HWM Division more closely evaluated its practices, including reevaluating LCOs.

The first step in reevaluating an LCO was a reexamination of the definition of a facility’s operating mode. Although facility modes are not formally defined in DOE Order 5480.22\(^2\), they generally are regarded as states of the facility that designate various distinguishable facility conditions and that are used with applicable operational limits to ensure an adequate level of safety while in each operating condition. Modes can also be seen as reflecting the relative hazards associated with different facility system configurations and can categorize the requirements placed on a facility. For the HWM and MMA facilities, which are basically waste storage facilities, only two modes were judged to be necessary for facility operation: operation (or operating) and nonoperation. A repair mode was judged to be unnecessary because repairs could be accommodated within the definition of the nonoperation mode. This redefinition of HWM facilities’ operating modes simplified the action statements associated with the original sets of LCOs.

An examination of the SAR accident analysis for the HWM\(^3\) and MMA\(^4\) revealed that no systems, structures, or components (SSC) were relied upon in response to the SAR accident scenarios. Limits were necessary to preserve some initial assumptions of the SAR accident analysis (e.g., facility mass material limits, individual container mass limits, container qualifications). Limits such as those for facility mass and individual container mass do not fit within the definition of operability and the need for surveillance to test for operability. Therefore, these limits were judged to be more suitable within the administrative control section of the TSR.

A suitable location for these limits had to be found within the administration control section of the TSR. Much more guidance is offered in the DOE order (DOE Order 5480.22\(^2\)) for the development of LCO requirements than is for the administrative control section. Very little guidance is provided about when and how to write an administrative control. The order primarily says that administrative controls are “provisions relating to organization and management, procedures, record-keeping, reviews, and audits necessary to ensure safe operations . . . .” The order provides a list of standard subjects that must be covered as administrative controls, but it does not explicitly state what other items should be covered as an administrative controls to preserve the assumptions made in the final SAR analysis. The Document of Example TSRs\(^5\) also provides very little help. Without any specific guidance, the administrative control subsection on programs was finally chosen as a possible location for these limits.

**Benefits of Recasting LCOs as Administrative Controls**

Surveillance requirements are necessary as part of the LCO program. Surveillance requirements afford an extra level of protection against violating a SAR commitment. However, because a formal program must be established to implement them, surveillance requirements do place an extra burden on management of the facility. The implementation document must include establishing mandated time limits for surveillance checks and documentation to support that these surveillance checks were completed. Failure to fulfill surveillance requirement within the specified time limit is considered a TSR violation. Therefore, surveillance requirements present an added risk of violating a TSR. With LCOs, the other risk of violating a TSR occurs whenever the required action is not
taken within the time specified following failure to meet the LCO (exceeding the limit, by itself, is not considered a violation, but it is still a reportable event under DOE 5000.3A). Therefore, two conditions are possible for violating a TSR; further, there is another possible condition that would necessitate the filing of an occurrence report.

LCO requirements are more rigidly defined than are administrative controls. Consequently, the requirements and conditions of administrative controls afford more operational flexibility for the facility. Administrative controls can be written to tie in closely with existing operations, and surveillance requirements are not mandated. Therefore, administrative controls offer only one possibility for a TSR violation (i.e., failure to comply with the administrative control requirement).

TSR violations related to LCOs could result in higher penalties against the facility than could TSR violations related to administrative controls. Because the level of control associated with administrative controls is judged to be less stringent, the severity of violation may be reduced. This conclusion, however, has not been formalized in any DOE guidance document or regulatory order. Interpretation of violations of TSR LCOs and administrative controls and the assessment of penalties are at the discretion of the DOE field representative, and considerable latitude is available to these individuals.

**Drawbacks of Recasting LCOs as Administrative Controls**

Loss of LCOs means loss of associated action statements. These action statements describe the actions to be taken in the event an LCO is exceeded and include the time limits associated with the required action. As described previously, a TSR violation has not occurred unless the time limit associated with the action statement has elapsed without completion of the action. Once the nonconformance is detected, the action statement time countdown begins, and facility personnel are given an opportunity to bring the facility back into compliance to avoid a TSR violation. Because administrative controls do not have action statements, this safeguard is lost. When requirements in the administrative control cannot be met, the TSR is automatically violated without an opportunity to rectify the problem prior to the violation occurrence.

Guidance on the format of administrative controls is also limited. The DOE order mentions that the body of an administrative control should be mostly text, with perhaps some tables. Because such guidance is so limited, the development of the administrative controls could potentially lead to interpretation challenges with the DOE Field Office representative.

Loss of a surveillance requirement associated with an LCO means that LCO “operability” is no longer tightly defined, and surveillance is not mandated at specified intervals. Again, this results in increased chance of conflicting interpretation, with the regulating body, of the conditions and requirements governing operation of the facility. For example, an inspector could judge that the amount of radioactive material may be in violation of the mass material limits because shipments were received between surveys, which determine the amount of radioactive material stored in the facility. Unless this situation has been discussed previously with the regulatory body, a potential TSR violation may be looming.
HWM’s Facilities, Safety, and Compliance Group decided that the benefits of converting LCOs to administrative controls far outweighed the drawbacks and that those drawbacks could be overcome.

The first task was deciding where within the administrative control section to place the limits. We believed that placing them in the administrative control subsection on programs made the most sense. The limits could be written in the program subsection simply by expanding the program descriptions. This approach had the benefit of placing the limits within the program that would actually implement them (e.g., package and facility mass limits within the radioactive- and hazardous-materials shipping and receiving program).

Although an “action statement” is not prescribed for an administrative control, it was decided to create a generic action statement to cover all the administrative control programs and to included it in the administrative control violations subsection. Because the number of facility operating modes was reduced to two (operation, and nonoperation), all the limits retained could be covered by a single generic action statement. The generic action statement requires that the affected waste management unit be returned to within the limit as soon as possible, but no more than 24 hours after discovery of the exceedence. If the affected waste management unit cannot be returned to within the limit within the prescribed 24-hour timeframe, the violation of an administrative control will have occurred. HWM Division is then required to notify DOE of the violation and must prepare an occurrence report in accordance with DOE Order 232.1.

The DOE representative concurred, for the most part, with this approach. He did ask to be notified by telephone whenever a limit was exceeded, even if the 24-hour timeframe were not exceeded. He agreed that this would not be considered a TSR violation; he only wanted to be informed of the situation. We agreed to add this statement in HWM’s TSR Implementation Plan.

We discovered that by recasting our LCOs as administrative controls, we significantly reduced the size and complexity of the TSR document. We still followed the format outlined in DOE Order 5480.22, although the sections pertaining to safety limits and LCOs consisted only of a brief statement indicating that these types of controls do not apply. The LCO section of the TSR document also includes a statement directing readers to Section 5, “Administrative Controls,” for TSR nuclear-inventory controls that were developed to preserve the assumptions made within the HWM SAR.

Section 1, “Use and Application,” of the TSR document contains definitions, operation modes, frequency notations, and abbreviations and acronyms. Section 5, “Administrative Controls,” contains the bulk of the TSR information. This section includes contractor responsibilities, contractor organization, a statement about procedures, the administrative control programs, a discussion about addressing administrative-control violations, a paragraph concerning minimum operations shift complement, and information concerning operating support, facility staff qualifications and training, operability definition and implementation principles, reviews and audits, and reporting requirements.
The administrative control programs were addressed in Subsection 5.4. The requirements were written up in a paragraph form and followed by tables, whenever necessary. After each requirement, an explanation of the requirement was given to expand the logic and reasoning that went into the development of the requirement. We made it clear that these explanations do not constitute additional requirements, but are merely to further the understanding of facility personnel regarding the initial rationale behind the requirement.

Surveillance to ensure that requirements are met were addressed in two ways: through day-to-day inspections by facility personnel and independent auditors (from other LLNL departments such as Hazards Control), as described in Subsection 5.9, “Reviews and Audits”; and as covered in the *TSR Implementation Plan* and HWM procedures.

The TSR requirements are implemented according to HWM’s *TSR Implementation Plan*. This controlled document describes the person (by position title) responsible for various aspects of the TSR implementation program. This implementation plan also lists the TSR administrative control programs and the pertinent documents containing detailed instructions on implementing administrative control limits at the HWM facility. This information is included here as Table 1. In Table 1, the items in italics were formerly written as LCOs, and those not in italics were administrative controls in the original TSR document. The primary implementation procedures are HWM 800: *Radioactive-Waste Acceptance and Inventory Monitoring*, and HWM 801: *TSR Chemical-Hazard Control Program*. The implementation plan and procedures have been issued as “trial-use” documents pending DOE approval of HWM’s TSRs.

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<th>Technical Safety Requirements (TSRs)</th>
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<td><strong>TSR Administrative Control Programs</strong></td>
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HWM facility personnel have been given a presentation on the overall safety analysis program, including TSRs and the TSR implementation plan and procedures. A more detailed presentation will take place after DOE approves the TSR document. We will update the TSR Implementation Plan and procedures as needed to reflect any modifications made to the TSR document to address final DOE comments. The HWM procedures will then be released for final signature approval. We expect to have final DOE approval of the TSR document by mid June 1997.

### Recommendations

Moving LCOs into the administrative control sections of TSRs should be done on a case-by-case basis. Controls for facilities with only two operational modes are most suitable for moving into administrative controls because, for such a facility, it is not difficult to write a generic action statement that will cover any possible administrative control violations. LCOs that are mass-material limits are most suitable for recasting as administrative controls, whereas LCOs on safety systems are the least suitable.

We recommend converting LCOs to administrative controls whenever feasible, particularly if an administrative control “action” statement can be developed in the administrative control violation section. This is, however, predicated on this approach being acceptable to the DOE representative involved. We also recommend developing an implementation plan that addresses the precise implementation of administrative controls and that points to all other operational procedures addressing implementation of the administrative controls are implemented. The implementation plan also should contain the titles of personnel responsible for implementing the specific aspects of the administrative control program. This document can be updated without having to perform an unreviewed-safety-question (USQ) determination. To reduce the potential for USQs, the actual TSR document should be written in general terms, and specific programmatic information should be reserved for the implementation plan and procedures.
References


Work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract W-7405-Eng-48.