

## Summary of Changes

to

P 421.1-2A

Support Operations Safety Analysis and Review System

**Revised Version Issued as P 421.1-2B of 8/25/04**

NETL Procedure 421.1-2A, Support Operations Safety Analysis and Review System, of 8/11/03, has undergone revisions. Changes made to this Procedure include the requirement to either archive the historical documentation in the SARS file or to mark the outdated information contained in the SARS file as “Historical Information.” Also, changes were made to explain that ISO 14001 forms (Scoring Matrix and Screening Analysis Questionnaire) are to only consider the environmental aspects and impacts directly related to the support operations and not those associated with the facility which will be considered in the facility SARS review. Other changes included minor definition and reference changes. Please replace NETL Procedure 421.1-2A with NETL Procedure 421.1-2B.

The most recent and official controlled hard copy version of this directive resides with NETL's Directives Coordinator. An electronic version of the controlled directive has been placed on the NETL Intranet for employee use. Printed hard copies of this electronic version are considered noncontrolled documents.

# U.S. Department of Energy

National Energy Technology Laboratory

## PROCEDURE

P 421.1-2B

DATE: 8/25/04

**SUBJECT:** SUPPORT OPERATIONS SAFETY ANALYSIS AND REVIEW SYSTEM

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1. PURPOSE. To describe the process and procedural requirements for a safety analysis and review of NETL onsite support operations (construction, operation, maintenance, renovation). The purpose of this safety analysis and review is to ensure that risks associated with NETL's onsite support operations are analyzed, understood, and eliminated, mitigated, or controlled to a degree acceptable by responsible line management prior to potential adverse impacts on workers, the public, the environment, facilities, or equipment.
2. CANCELLATION. NETL Procedure 421.1-2A, Support Operations Safety Analysis and Review System, of 8/11/03.
3. REFERENCES.
  - a. DOE Order 440.1, [Worker Protection Management for DOE Federal and Contractor Employees](#).
  - b. DOE Policy 411.1, [Safety Management Functions, Responsibilities, and Authorities Policy](#).
  - c. DOE Policy 450.4, [Safety Management System Policy](#).
  - d. NETL Order 421.1, [Safety Analysis and Review System](#).
  - e. NETL Order 450.1, [Environmental Management System \(EMS\)](#).
  - f. NETL Procedure 420.3-1, [Operating Procedures and Operator Aids](#).
  - g. Referenced Forms:
    - (1) NETL F 421.1-6, [Industrial Hygiene Monitoring Requirements](#).
    - (2) NETL F 421.1-10, [Support Operations Safety Analysis Cover Sheet](#).

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**INITIATED BY:** Office of Institutional and Business Operations  
**NO. OF PAGES/ATTACHMENTS:** 9 pages, 5 attachments

- (3) NETL F 435.1-1, [Pollution Prevention and Waste/Resource Minimization Opportunity Assessment](#).
- (4) NETL F 440.1-12/1, [PPE Hazard Assessment](#).
- (5) NETL F 450.1-2, [Significant Impact Scoring Matrix for NETL Projects, Facilities, and Operations](#).
- (6) NETL F 450.1-4, [ISO 14001 Screening Analysis Questionnaire](#).
- (7) NETL F 450.1-5, [Operational Training Form](#).
- h. 29 CFR 1910, Occupational Safety and Health Standards (General Industry).
- i. 29 CFR 1926, Safety and Health Regulations for Construction.
- j. NFPA 45, Standard on Fire Protection for Laboratories Using Chemicals.

#### 4. DEFINITIONS.

- a. AD -- Associate Director.
- b. Administrative Control -- A *mitigation* method carried out through DOE or NETL directives and management practices (e.g., DOE Orders, NETL Procedures, specific Operating Procedures, operations scheduling, etc.). Administrative controls are the second line of defense against *hazardous consequences*.
- c. Annual ES&H Assessment -- The yearly evaluation of all *support operations that have undergone a safety analysis and review* to ensure that no significant changes have been made to the support operation (from the most recent *SARS* package) or to provide revisions.
- d. Consequence -- An adverse result (e.g., damaged building, **injury**, death, soil contamination).
- e. DD -- Division Director.
- f. Engineering Control -- A *mitigation* method carried out through authorized design practices, standards, and codes such as those maintained by the Engineering Applications and Operations Division or by modifying the process such as substituting a less hazardous chemical. Engineering controls are the first line of defense against *hazardous consequences*, and are preferred over all other *mitigation* methods.
- g. ES&H DD -- The Division Director for the Environmental, Safety, and Health Division.

- h. Event -- An occurrence or situation (e.g., gas leak) that links a *hazard* (e.g., sulfur dioxide in a pipe) to a *consequence* (e.g., sensory irritation caused by sulfur dioxide exposure).
- i. Frequency -- Probability of a *hazard* leading to a *consequence*.
- j. Hazard -- A condition (e.g., pressurized sulfur dioxide in a stainless steel line) that may lead to a *consequence*.
- k. Hazard Analysis -- A discovery tool used to **identify and** raise awareness of potential *hazardous consequences* associated with a *support operation*.
- l. Impact -- The magnitude of a *consequence*.
- m. ISO -- The International Organization for Standardization. A worldwide federation of national standards bodies from nearly 200 countries. The ISO 14001 standard is helping NETL to structure how we manage our operations and to continuously improve our environmental performance.
- n. Line Management -- NETL line management (in this Procedure) is the AD, DD, or both who have authority over the support operation.
- o. Mitigation Method -- The implementation of *engineering* or *administrative controls*, *safety instrumented systems*, or *personal protective equipment* to eliminate a *hazardous consequence* or reduce the associated *risk(s)* to an acceptable level.
- p. PPE -- Personal Protective Equipment. A *mitigation* method serving as the last line of defense against *hazardous consequences* (respirators, gloves, Tyvek suits).
- q. Probability -- The likelihood that a consequence will occur.
- r. Responsible DD -- The Division Director who has authority and responsibility over the support operation.
- s. RP -- Responsible Person. The RP is the DOE employee most responsible for the overall support operation.
- t. Risk -- The product of the *probability* and the *impact* associated with a *consequence*.
- u. Safety -- In this Procedure, safety encompasses environment, safety, and health considerations.
- v. SARS -- Safety Analysis and Review System.
- w. SARS Package -- Documentation assembled to demonstrate appropriate ES&H issue consideration in the planning and execution of support operations.

- x. Standards -- The regulatory standards, consensus standards, and best management practices recognized as requirements for NETL. These standards are embodied in NETL's Focused Standards List.
- y. Support Operation -- A support operation is any non-R&D activity performed on site by site personnel. Activities include construction, operations, maintenance, and renovation.

5. QUALITY CONTROL.

- a. Concerns or ideas for improving the SARS process should be directed to the SARS Procedure Subject Matter Experts (SMEs). SMEs are listed on the ES&H and the EAOD web pages.
- b. The quality and content of a safety analysis is the responsibility of the RP and their Line Manager.

6. RESPONSIBILITIES.

- a. The RP shall:
  - (1) Ensure that the development and contents of the SARS package are complete and compliant with the requirements of this Procedure, by being actively involved with its creation.
  - (2) Ensure that the mitigation methods described in the hazard charts have been implemented by the required activity.
  - (3) Ensure that all personnel associated with the support operation have reviewed and understood the operation's hazards and consequences as well as the methods to be used for their elimination, reduction, mitigation and control.
  - (4) Inform the Responsible DD if the operations' hazards change and ensure that the SARS package is updated accordingly.
  - (5) Ensure work area inspections are done according to the Work Area Inspection Plan. See Attachments 2 and 3.
  - (6) Upon request, assist the ES&H Representative during the annual assessment.
  - (7) Inform appropriate OST DDs of changes impacting their operation.
  - (8) Sign the SARS package.

- b. The Responsible DD shall:
- (1) Approve or disapprove the SARS packages for support operations within their Division. If approved, the DD signs the cover sheet for the SARS package.
  - (2) Ensure that support operations under their jurisdiction have undergone a safety analysis and review prior to commencement or modification to an existing operation.
  - (3) Designate the committee members tasked with reviews of the safety analyses, including committee chairpersons, if needed. This responsibility is shared with the ES&H DD.
  - (4) Notify any impacted R&D organization of any issues or problems of SARS approval for support operations.
  - (5) Determine the RP for the safety analysis.
  - (6) Determine the review level for the safety analysis.
  - (7) Determine when proposed modifications are significant enough to require safety analyses modification.
- c. The ES&H Representative shall:
- (1) Provide SARS advice and recommendations.
  - (2) Review Level 1 safety analysis, and may serve on Safety Analysis Committee.
  - (3) Conduct annual assessments of SARS Package and modify the information as needed to meet changes in operations or requirements.
- d. The ES&H DD shall:
- (1) Assign an ES&H Representative to each operation.
  - (2) Designate the committee members tasked with reviews of the safety analysis packages, including committee chairpersons, if needed. This responsibility is shared with the Responsible DD.
  - (3) Provide for filing of SARS documentation.
  - (4) Ensure periodically reviewing this Procedure.

7. TRAINING REQUIREMENTS. There are no specific training requirements for this Procedure.

8. DOCUMENT CONTROL.

- a. The appropriate SARS File Coordinator shall maintain controlled versions of all approved SARS packages and their associated operating procedures, copies of their corresponding permits, certifications, and other appropriate documents in the ES&H SARS file as set forth in this Procedure and associated procedures such as NETL Procedure 420.3-1, Operating Procedures, and Operator Aids. Each file shall be given a unique file number by the ES&HD.
- b. The SARS file shall be kept for the life of the support operation.
- c. Historical documents shall be removed from the active SARS file and archived to the ES&H Records Center or they shall be clearly marked as "Historical Information" to prevent their unintended use.

9. PROCEDURE. Every NETL onsite support operation shall undergo a safety analysis and review prior to commencement or modification of the support operation. A flow chart of the SARS Process is shown in Attachment 1, SARS Process for Support Operations, of this Procedure. If the safety analysis and review shows that the risks associated with the support operation are acceptable to the responsible line management, the activity will be approved. After approval, the operation may commence.

- a. Content Requirements -- The content requirements for the safety analysis are found in Attachments 2, 3, and 4 to this Procedure.
  - (1) Attachment 2, Support Operations Safety Analysis Contents Requirements, describes the content requirements for safety analyses conducted on support operations.
  - (2) Attachment 3, Modification to Support Operations Safety Analysis Contents Requirements, describes the content requirements for modifying a safety analysis for support operations.
- b. Identify Hazards -- All safety analyses shall identify hazards associated with the support operation during its life; describe them; determine the risk for each hazard; and suggest methods of elimination, mitigation, or control that will reduce the risk to acceptable levels. This information will be presented in the form of completed hazard charts, which are described and included in Attachment 4, Hazard Analysis Instructions.
- c. Safety Analysis Review Level -- The Responsible DD or Designee shall determine the review level for the safety analysis.
  - (1) Each safety analysis shall be assigned a review level -- Level 1, 2, or 3 -- based on how much damage the unmitigated hazards could cause. Hazards with standard mitigation techniques will not contribute to the review level determination (since the already-approved techniques will not be reviewed again

as part of the support operation safety analysis). Guidance for the review level determination is in Attachment 5, Review Level Determination Guidance.

- (2) Ramifications of the review level determination are as follows:
- (a) The preferred method of hazard identification and analysis shall vary, dependent upon the review level. See Attachment 4, Hazard Analysis Instructions.
  - (b) Review of the safety analysis shall vary:
    - i. Level 1 safety analyses shall be reviewed by the ES&H Representative.
    - ii. Levels 2 and 3 safety analyses shall be reviewed by the Support Operations SARS Committee.
- d. Support Operations SARS Committee -- For Levels 2 and 3 safety analysis reviews, the Responsible DD and the ES&H DD (acting together) shall choose committee members to review the safety analyses. Both DDs shall concur on all committee members. A committee chairman shall also be chosen by the DDs. Typically, at least one ES&H Representative will be on the committee.
- e. The Process -- The order of events for a support operations SARS analysis is described below and is shown in Attachment 1, SARS Process for Support Operations. Shortly after a Support Operation is introduced for review:
- (1) The Responsible DD or Designee determines the safety analysis review level of 1, 2, or 3.
  - (2) The RP assures the safety analysis is generated and completed.
    - (a) The RP shall be involved in the development of the safety analysis, and is responsible for its content.
    - (b) The contents requirements for each kind of safety analysis (operation or modification) are described in Attachments 2, 3, and 4.
  - (3) When the safety analysis is completed:
    - (a) A Work Area Inspection is performed for Review Level 2 or 3 operations and is provided to the ES&H representative.
    - (b) The safety analysis is reviewed, either by the ES&H Representative (Review Level 1) or the Support Operations SARS Committee (Review

Levels 2 and 3), dependent upon the safety analysis review level. The review shall help to ensure that:

- i. Hazards have been comprehensively and accurately identified, described, and addressed.
  - ii. The methods of mitigation or control are adequate, reasonable, and feasible.
  - iii. The resulting level of risk is acceptable.
- (4) The safety analysis review results are provided to the RP.
  - (5) The RP shall respond to all concerns raised in the safety analysis review and the work area inspection. Responses shall address all concerns, either by addressing the concern or by explaining the disagreement with the concern.
  - (6) The safety analysis, safety analysis cover sheet NETL F 421.1-10, safety analysis review, safety analysis review comments, work area inspections, and any other documents generated shall be placed in a single package -- "The SARS Package." The SARS package shall be submitted by the RP to the Responsible DD.
  - (7) The Responsible DD shall either approve or disapprove the contents of the SARS package as a whole (based on criteria such as merit, reasonableness, comprehensiveness, and risk acceptability). If the Responsible DD approves the SARS package, the Responsible DD signs the cover sheet. If the SARS package is disapproved, the Responsible DD shall document to the RP what was unacceptable. Upon resolution of unacceptable items, the RP may resubmit the SARS package to the Responsible DD.
  - (8) ADs shall be notified of any non-approved Support Operations. The AD has the authority to overrule any determination.
  - (9) After the Responsible DD approves the SARS package, the operation is approved to begin.
  - (10) Prior to beginning the operation or modifying an existing operation, employees associated with the operation shall review and understand the hazards, and the methods being used for hazard mitigation.

- f. Annual Assessments -- An annual assessment of the SARS package and its implementation shall be coordinated by the ES&H Representative. The purpose of annual assessments is to determine the continued validity of the safety analysis and review and to address any revised or additional requirements. Typical items that might be re-evaluated include changes in site conditions, worker training, operating procedures, and effectiveness of controls. AIIS findings from inspections or assessments will also be reviewed.

If documents are updated during the annual review, the historical documents shall be removed from the active SARS packages and archived to the ES&H Records Center or clearly marked as "Historical Information." This is to prevent the unintended use of out-of-date documents.

- g. Change of Operation Personnel -- New operations personnel must review and understand the operation's hazards and the methods being used for hazard/risk mitigation and control. New personnel must be trained according to the requirements in the SARS file and an Operational Training Form NETL F 450.1-5 completed.
- h. Safety Analysis Modification -- The safety analysis may be modified to more accurately describe the hazards and hazard controls of an operation, or to broaden the scope of a safety analysis. See Attachment 3 for modification requirements.

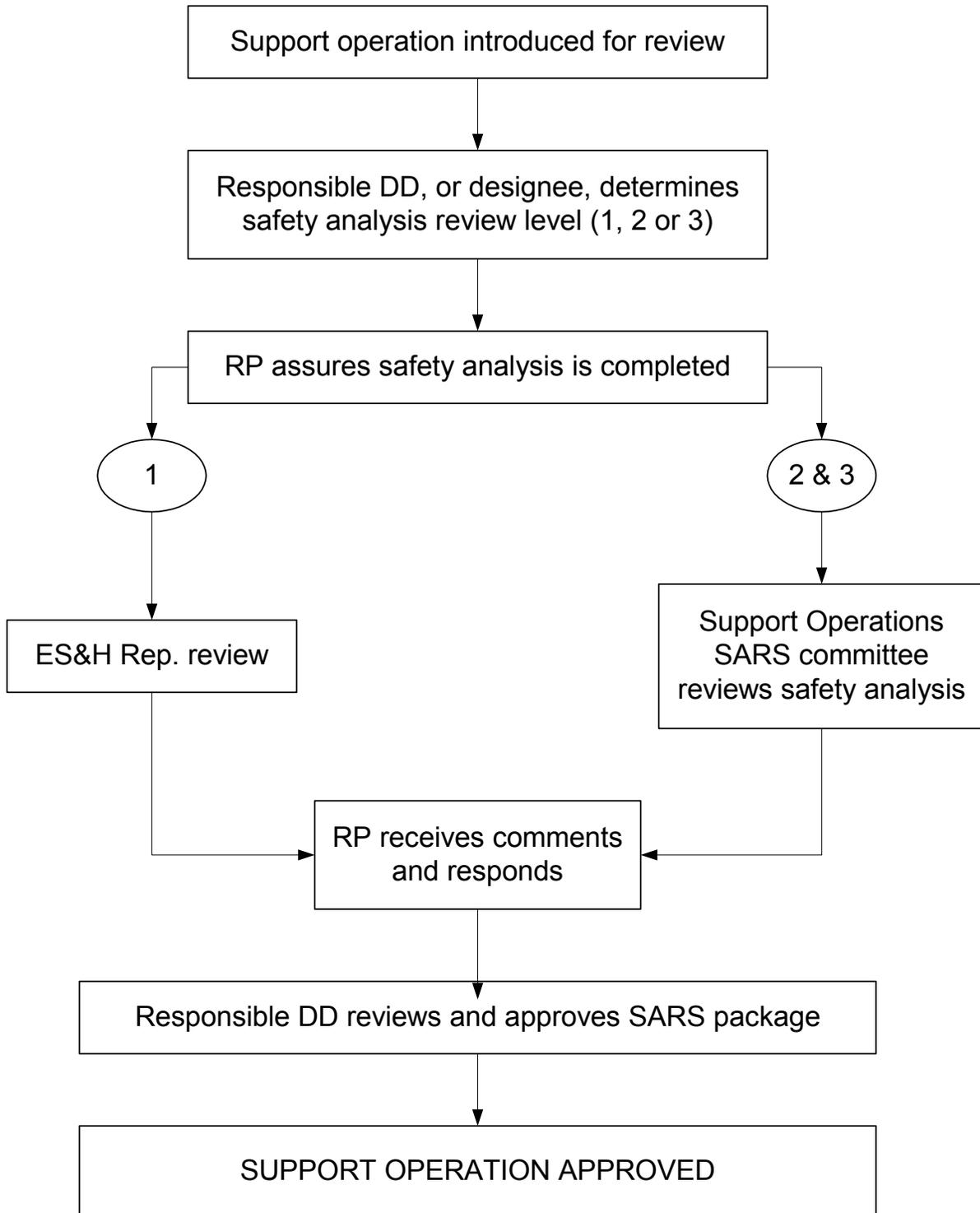
#### 10. ATTACHMENTS.

- Attachment 1 -- SARS Process for Support Operations.
- Attachment 2 -- Support Operations Safety Analysis Contents Requirements.
- Attachment 3 -- Modification to Support Operations Safety Analysis Contents Requirements.
- Attachment 4 -- Hazard Analysis Instructions.
- Attachment 5 -- Review Level Determination Guidance.

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Associate Director, OIBO

### SARS PROCESS FOR SUPPORT OPERATIONS



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## ATTACHMENT 2

## SUPPORT OPERATIONS SAFETY ANALYSIS CONTENTS REQUIREMENTS

Below are the minimum requirements for a safety analysis of support operations.

1. Cover Sheet -- Support Operations Safety Analysis Cover Sheet, refer to Form 421.1-10.
2. Operation Description -- The support operation description shall include a summary of the operation and, if appropriate, location. In most cases, this section should not be more than three pages long and should:
  - a. Describe the operation in terms of labor-hour requirements, number of personnel, and hours when the operation will be performed.
  - b. Describe the industrial hygiene tests that will be performed.
3. ES&H Requirements -- This section shall include:
  - a. External ES&H permits and certifications imposing limits, such as air permits, NPDES permits, utility board permits, hazardous waste permits, State and local licenses, etc. This section shall also include the status of required ES&H permits, e.g., expected date of required permits - if not yet acquired, expiration date of obtained permits, etc.
  - b. Waste minimization information. Complete and attach Form 435.1-1 to document that a pollution prevention and waste/resource minimization assessment has been conducted for this support operation.
  - c. ISO 14001 Significant Impact Scoring Matrix for NETL Projects, Facilities, and Operations, refer to Form 450.1-2.
  - d. ISO 14001 Screening Analysis Questionnaire, refer to Form 450.1-4.

**NOTE:** When completing the ISO 14001 forms, only those environmental aspects and their associated impacts directly related to the activities performed by the support operation personnel will be considered. Aspects/impacts associated with a facility or R&D project shall be covered by their own set of forms. If because of site differences, different ISO forms are required (one set for each site), an explanation for the need for the two sets of forms shall be clearly stated in the SARS package.

  - e. PPE Hazard Assessment, refer to Form 440.1-12/1.
  - f. Operational Training, refer to Form 450.1-5.
  - g. Industrial Hygiene Monitoring Requirements, refer to Form 421.1-6.

4. Operating Procedures -- The appropriate SARS File Coordinator shall maintain controlled versions of all operating procedures as set forth in this Procedure and associated procedures such as NETL Procedure 420.3-1, Operating Procedures and Operator Aids. Operating procedures are only mandatory for those support operations that would pose significant ES&H risk (e.g., serious injury, death, major off-site releases of chemicals) in the absence of such procedures.
5. Training -- Describe and/or list operation specific training required prior to operation. List the trained operators. Training shall be documented in the SARS package. An Operational Training Form 450.1-5 shall be completed for each person covered by the analysis.
6. Hazard Charts -- Identify and analyze all significant hazards associated with the operation. The hazard analyses will result in a series of hazard charts, including a different hazard chart for each hazard. See Attachment 4 for additional instructions.
7. Work Area Inspection Plan -- The work area inspection plan requirements determined by the RP will vary with each analysis, based upon the degree of the hazard, variability of hazard, training of personnel, etc. Each safety analysis must have a plan showing how the work area will be inspected for each job covered by the safety analysis. The work area inspection plan must include at least “who” will do the inspection, and “when” inspections must be performed.
  - a. Who -- Who must perform the inspection will depend upon the level and kind of expertise needed to perform the inspection. This may be a job supervisor, an ES&H professional, a senior electrician, a facility custodian, an area custodian, etc.
  - b. When -- When a work area inspection must be performed can vary from “never” to “ongoing.” Other possibilities include:
    - (1) The first time an operation is conducted (for highly repetitive operations).
    - (2) At the start of each new stage of work (for construction or multi-phased operations).
    - (3) For any operation beyond a certain set of limits (for example: high voltage for electrical operations).
    - (4) Periodically (daily, weekly, monthly, quarterly).

## ATTACHMENT 3

MODIFICATION TO SUPPORT OPERATIONS SAFETY  
ANALYSIS CONTENTS REQUIREMENTS

Below are the minimum requirements for a support operation modification safety analysis.

1. Cover Sheet -- Fill in all of the blanks of the NETL Form 421.1-10, Support Operations SARS Cover Sheet, at the appropriate time.
2. Modification Description -- The modification description shall include any changes in operation scope or changes in operation hazards or mitigation methods. This section should be typically one page but not more than three pages long.
3. Modifications to Operations -- Include the following in the safety analyses of operations modifications:
  - a. Indication of all changes to drawings or text by redline, highlight, or in some other easily recognizable way.
  - b. Description of how the operation will be changed in terms of labor-hour needs.
  - c. Description of industrial hygiene tests, if any, that will be performed after the modification to ensure operator health.
  - d. Description of changes to limits imposed by external ES&H permits, such as state air permit, NPDES permit, utility board permit, hazardous waste permit, etc., and the status of new or modified permits.
  - e. Inclusion of Operating Procedures. Modified Operating Procedures shall be completed and transmitted to the appropriate SARS File Coordinator as set forth in this procedure and associated procedures such as NETL Procedure 420.3-1, Operating Procedures and Operator Aids.
  - f. Description of new training requirements due to the modification. This training shall be required prior to commencing operations. List trained operators and complete new forms 450.1-5 for each operator.
4. Modifications -- All modified SARS packages shall contain new hazard charts for new hazards, changed hazards, or hazards with new methods of mitigation. A new chart will be prepared for each "modified" hazard. See Attachment 4, Hazard Analysis Instructions, for additional instructions.
5. Work Area Inspection Plan -- Modify the inspection plan as needed.

6. Historical Documents -- To prevent their unintended use, historical documents shall be replaced with the updated documents, and the outdated documents either marked as “Historical Information” or removed from the SARS package and archived in the ES&H Records Center.

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## ATTACHMENT 4

## HAZARD ANALYSIS INSTRUCTIONS

1. Hazard Identification -- The method used to identify hazards will change depending on the review level (1, 2, or 3) of the support operation. Texts on hazard identification methods are available from ES&H, the library, or through an internet search. ES&H personnel can assist you with this.
  - a. Review Level 1 Operations -- Review Level 1 operation hazards shall be determined using a checklist, a What If Analysis, or a combination of the two.
  - b. Review Level 2 Operations -- Review Level 2 operation hazards shall be determined using a What If Analysis, Job Safety Analysis (JSA), Job Hazard Analysis (JHA), or similar method. ES&H DD, or Designee, approval of the method is required, and assistance is recommended when performing this analysis.
  - c. Review Level 3 Operations -- Level 3 operation hazards shall be determined using a Job Safety Analysis (JSA), Job Hazard Analysis (JHA), or a more rigorous method. ES&H DD, or Designee, approval of the method is required and shall assist with the performance of this analysis.
2. Creating the Hazard Charts -- Each hazard identified shall be analyzed on a separate hazard chart as follows:
  - a. Hazard Identification -- Briefly describe the hazard. This should only take 1-3 sentences, in most cases.
  - b. Consequence Identification -- Briefly describe the (adverse) consequence that could result from the hazard, including, if possible, the probability of occurrence, events required to link the hazard with the consequence, and the consequence's impact.
  - c. Mitigation Method -- Describe what mitigation methods will be taken to reduce the hazard. Mitigation methods shall be engineering controls, administrative controls, or personnel protective equipment (PPE), prioritized in descending order with PPE being the least desirable mitigation method.

If the mitigation method is a job-specific Procedure, the pertinent part of the Procedure must be referenced with the specific section identified.

If the mitigation method is an official NETL Procedure, such as a confined space entry, the Procedure may be referenced here as the mitigation method. Do not attach the Procedure.

- d. Resulting Risk Level -- Explain how the risks associated with the hazard have changed as a result of the mitigation method. Explanations are to be qualitative, not quantitative, in nature. If the mitigation method is adherence to an official NETL Procedure, write "N/A" in this section as NETL management has already approved the method (by signing the Procedure).
3. Example Hazard Chart -- An example hazard chart is shown below.

<b>Hazard Identification:</b> Radiative Heat from Welding Operation
<b>Consequence Identification:</b> Heat stress to operators, if ventilation is not operational. This event is likely to occur given the history of ventilation shutdowns.
<b>Mitigation Method:</b> Install an alarm to inform personnel that ventilation has shut down. Employees shall only work in 15-minute shifts (per hour) under this condition. Generate and enforce operational procedures to reflect this. ES&H shall monitor heat levels during a ventilation shutdown event to validate these conclusions.
<b>Resulting Risk Level:</b> With the operational control in place, employees should not be exposed to unacceptable heat stress levels.

## ATTACHMENT 5

## REVIEW LEVEL DETERMINATION GUIDANCE

A support operation's review level will determine the "intensity" of the safety analysis review. The higher the safety analysis review level, the more appropriate the analysis' contents are for a comprehensive and rigorous review.

The review level determination does not take into account hazards mitigated by NETL Procedures.

The review level determination for the safety analysis shall be based on the impact of the worst potential support operation consequence (e.g., an adverse result of a hazard). The review level determination is largely based on the impact of the consequence, and not the probability of the consequence occurring. The probability of a consequence occurring will be considered in the safety analysis, but does not necessarily influence the intensity of a safety analysis review.

The universal questions to ask (at this preliminary stage of analysis) are:

1. Who can get hurt by the hazard's consequence?
2. How badly can they get hurt?
3. Can people outside the work area be injured or the environment outside the work area be damaged?

The chart below should be used to make the review level determination for a safety analysis.

<b>Review Level</b>	<b>Impact Limit of the Worst Consequence Associated With an Unmitigated Hazard</b>
1	Negligible potential for serious injury or illness <u>and</u> negligible impacts outside the support operation area.
2	Potential for serious injury or illness <u>and</u> negligible impacts outside support operation area.
3	Potential for serious injury, illness, or impacts outside support operation area.

When reading this chart, keep in mind the word "potential" does not describe the probability of an event occurring. The word "potential" is being used to describe the potential for damage if the event does occur.

For example: If a preliminary safety analysis describes an operation with no hazards, except the operation of a large fuel cell, and there is no standard hazard mitigation for fuel cells, the review level would be determined by asking the following questions:

1. If the large fuel cell explodes, is the potential for serious injury negligible? *Answer: No.* [Which indicates that the safety analysis is not a Review Level 1.]
2. If the large fuel cell explodes, is there the potential for serious injury? *Answer: Yes.* [Which indicates that the safety analysis will be either a Review Level 2 or 3.]
3. If the large fuel cell explodes, is there the potential for serious injury, illness, or impact outside the support operation? *Answer: No.* [Which indicates that the safety analysis is not a Review Level 3.]

The safety analysis would require a Level 2 review.