

Wildland Fire Safety Enhancement Action Plan

Response to 1/19/01 DOE Wildland Fire
Safety Enhancement Memo



Introduction

On January 19, 2001, Secretary Richardson signed a memorandum directing a number of actions regarding the Department of Energy's Wildland Fire Safety Initiative. The Secretary's memorandum was officially transmitted by the Brookhaven Area Office to BNL on February 26, 2001 with a response required by March 9, 2001. Portions of these actions are assigned to DOE contractor organizations (i.e., BNL) and are restated in the body of this report. Further guidance on the development of the action plan was provided by DOE EH on March 1, 2001¹.

The DOE specified actions are included in the body of this report. For the applicable items, an action plan has been described within this report. The action plan captures the efforts already underway at BNL. The plan lists items, establishes target dates for completion, and provides estimated costs associated with implementation. Tracking of actions will be performed by a BNL Action Tracking System (ATS) under assessment #361. Status of the Action Plan's action items will be available to DOE on this platform.

¹ "Guidelines for Implementation Plans for the January 19th Secretarial Memorandum on Wildland Fire Safety Enhancements", March 1, 2001, Dennis Kubicki to Distribution

Site Level Improvements Applicable to BNL

The following table represents the matrix of recommendations (improvements) under the category of contractor responsibility presented in the January 19, 2001 memorandum from former Secretary Richardson, titled "Wildland Fire Safety Enhancements." The right column indicates the improvement item's applicability to Brookhaven National Laboratory.

Improvement	Applicable to BNL?
1. Evaluate and document the hazard from, and potential consequences of, wildland fires.	Yes
2. Expand the fire protection baseline needs assessment to reflect wildland fire response needs. A fire protection baseline needs assessment is required by DOE Order 420.1.	Yes
3. Ensure that fire protection program implementation procedures adequately address wildland fire prevention and mitigation.	Yes
4. Ensure that fire and emergency response plans and procedures adequately address wildland fires.	Yes
5. Conduct drills and exercises on wildland fire scenarios with fire and emergency response organizations that would be involved in responding to a major wildland fire at the site.	Yes
6. Implement or expand fire safety and emergency management self-assessments to include wildland fire prevention and response capabilities.	Yes
7. Implement appropriate actions to address applicable lessons learned from the CY 2000 wildland fires (compiled in Appendix B of the report).	Yes

Summary of Action Items

This table summarizes the list of specific actions addressing the Wildland Fires Enhancement Action Plan issues for BNL. The issues are being tracked in BNL's Action Tracking System under assessment #361.

Action Item	Target Date	Responsibility
Action Item #1: ATS 361.1.1 Formalize the calculations establishing the potential release concentrations of radiological material from fire involving the vegetation in the former Hazardous Waste Management Facility.	August 30, 2001	Steve Layendecker, RCD
Action Item #2: ATS 361.1.2 Incorporate required wildland fire protection measures into the Facility Use Agreements for facilities along the wildland interface zone.	September 28, 2001	Barbara Royce, F&O
Action Item #3: ATS 361.1.3 A review of facilities in the wildland interface zone needs to be conducted to clearly establish wildland fire protection criteria for use in the Facility Use Agreements.	September 28, 2001	Joe Levesque, EM
Action Item #4: ATS 361.1.4 Complete the BNL Wildland Fire Assessment report.	April 16, 2001	Joe Levesque, EM
Action Item #5: ATS 361.1.5 Develop a fire protection baseline needs assessment for BNL incorporating wildland fire issues.	June 28, 2002	Chief Mike Carroll, EM
Action Item #6: ATS 361.1.6 Develop a Subject Area that incorporates wildland fire safety aspect for BNL as a site (fire breaks, infrastructure "facilities" that are not normally considered conventional facilities, controls on ignition sources, fuel management).	February 25, 2002	Joe Levesque, EM
Action Item #7: ATS 361.1.7 Explore strengthening the mutual aid agreement with the New York State Forest Service.	April 2, 2001	Joe Levesque, EM
Action Item #8: ATS 361.1.8 Finalize the Wildland Fire Response procedure for BNL Fire/Rescue Group.	April 30, 2001	Frank Marotta, EM
Action Item #9: ATS 361.1.9 Establish a Wildland Lessons Learned Committee to review and report on lessons learned applied to BNL.	April 2, 2001	Joe Levesque, EM

DOE Recommendations and Action Plan Discussion

Each DOE recommendation, applicable to BNL, is listed below in *Italics*. Following the recommendation is a self-assessment of the issue and the resulting actions needed for corrective action.

1. *Evaluate and document the hazard from, and potential consequences of, wildland fires.*

Evaluations and documentation of hazards and consequences at BNL facilities occur at several levels. The following is a list pertinent to wildland fires:

The BNL Hazard Assessment (<http://www.bnl.gov/emergencyservices/Haz%20Ass%202000.doc>)

The Hazard Assessment documents compliance with Emergency Planning requirements defined in DOE Order 151.1, OSHA 29CFR 1910.119 "Process Safety Standard", and 40 CFR 68 Risk Management Program. Emphasis in the Hazard Assessment is on the airborne release of toxic and radioactive materials that could pose a threat to on-site and off-site populations. Facilities that contain or that exceed "Threshold Planning Quantities" (toxic materials) or CFR 30.72 Schedule C quantities (radiological materials) are analyzed for their release potentials

Fire is one of the scenarios that is evaluated for each facility in the Hazard Assessment document. The scenarios generally assume a worst case condition whereby normal fire suppression systems are out of service and manual fire fighting is not present. A wildland fire or other source could initiate this scenario. There are no identified release potentials exceeding the thresholds established by DOE in the Hazard Assessment.

There is an identified weakness in one of the facilities examined by the Hazard Assessment. The former Hazardous Waste Management Facility has radiological contamination in the soil. Vegetation growing in this soil has absorbed radiological materials. As with any organic material with radiological content, radiological components will be released in a wildland fire. Soil contamination levels are low. The concentrations can be reduced if the material enters the vegetation. Concentrations can be further diluted by the dispersion in the fire plume. Formal calculations are being prepared to determine release potentials in case of a wildland fire.

Action Item #1: *ATS 361.1.1* Formalize the calculations establishing the potential release concentrations of radiological material from fire involving the vegetation in the former Hazardous Waste Management Facility. (Deliverable: Calculations on Release Potentials from Vegetation at former Hazards Waste Management Facility, Target Date: August 30, 2001, Responsibility: Steve Layendecker, Cost: 320 person hours).

Facility Authorization Basis

The Facility Authorization Basis (<https://sbms.bnl.gov/program/pd08/pd08d011.htm>) is a management system that institutionalizes the process for facilities to achieve and maintain an appropriate authorization basis for operations. This process is determined by the hazard categorization of each facility. A flow chart showing the process is located at <https://sbms.bnl.gov/standard/1o/1o01e011.pdf>. This process assures that the appropriate analysis is generated for the hazards associated with the facilities within BNL:

Depending on the level of hazard categorization assigned to these facilities, this process generates documents such as Safety Assessment Documents (SAD), Safety Analysis Reports (SAR), Hazard Analyses, Operational Safety Limits, Experimental Safety Limits, and Fire Hazard Analyses. Fire

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Hazard Analyses often become part of higher-level safety documentation at the higher-level hazard facilities.

Fire Hazard Analyses conducted at BNL have examined external fire exposure issues in subject facilities. Fire Hazard Analyses have been conducted for facilities requiring Safety Analysis Documents and Safety Analysis Reports (see RHIC STAR Detector SAD, Page 20 <http://www.c-ad.bnl.gov/sad/appendices/app32.pdf>).

BNL uses the Facility Use Agreement to capture important operational criteria. While wildland fire issues have been analyzed and documented for individual facilities with SAR/SADs. The facility specific "defensible space" aspect of wild fire protection and other wildland fire protection features has not been captured in the Facility Use Agreements.

Action Item #2: ATS 361.1.2 Incorporate required wildland fire protection measures into the Facility Use Agreements for facilities along the wildland interface zone. (Deliverable: Modify Facility Use Agreement, Target Date: September 28, 2001, Responsibility: Barbara Royce, Cost: 15 person hours).

Lower level safety analyses have included fire protection criteria during reviews. Some low hazard facilities (standard industrial facilities) have not been reviewed in detail. Documentation of wildland fire protection criteria has not been established.

Action Item #3: ATS 361.1.3 A review of facilities in the wildland interface zone needs to be conducted to clearly establish wildland fire protection criteria for use in the Facility Use Agreements. (Deliverable: Provide information for Facility Use Agreements, Target Date: September 28, 2001, Responsibility: Joe Levesque, Cost: 300 person hours).

Non-Building facilities as "Facilities"

Buildings have been the focus of the two-preceding management systems. Due to the site wide impact of the wildland and potential wildfire, there is a need to examine the entire site or segments of the infrastructure as a facility. This has not been done in the past. A BNL Wildland Fire Assessment is underway which includes the topic of site wide hazards from wildland fires. Preliminary findings from the site wide assessment indicates some areas requiring increased resources for corrective actions. There are some one time activities (increase defensible space for buildings, clearing fire breaks, provide second exit roads) and some increases in baseline operations (fire break maintenance, fuel reduction programs, Fire Management Plan/Fire Protection Assessment).

Action Item #4: ATS 361.1.4 Complete the BNL Wildland Fire Assessment report. (Deliverable: Wildland Fire Assessment Report, Target Date: April 16, 2001, Responsibility: Joe Levesque, Cost: 80 person hours; preliminary one time costs from Assessment items \$500k, preliminary program annual costs from Assessment items \$150k).

2. Expand the fire protection baseline needs assessment to reflect wildland fire response needs. A fire protection baseline needs assessment as required by DOE Order 420.1.

Action Item #5: ATS 361.1.5 Develop a fire protection baseline needs assessment for BNL incorporating wildland fire issues. (Deliverable: Baseline Assessment of BNL Fire Protection, Target Date: June 28, 2002. Responsibility: M. Carroll, Cost: 80 person hours).

3. Ensure that fire protection program implementation procedures adequately address wildland fire prevention and mitigation.

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As part of a comprehensive review of BNL wildland fire issues, a Wildland Fire Assessment is in being generated. The document is nearly completed at the time of writing this action plan. The Wildland Fire Assessment uses the National Fire Code's Standard on "Protection of Property and Life from Wildfire" (NFPA 299). NFPA 299 is recognized as an initial step in defining the risks and hazards. Further refinement of the assessment is planned by utilizing the US Forest Service's Fire Protection Assessment. Adjustments will also be made in the assessment as warranted pending further guidance from DOE.

Using the current NFPA 299 techniques, the BNL's level of hazard is "moderate." This analysis is being documented in the "BNL Wildland Fire Assessment" documents (see Action Item #4). There are improvements needed for several facilities to minimize damage from wildland fires. There is also a need to define the facilities along the wildland fire interface zone and document their requirements (Action Items 3 and 2 respectfully). Several management system elements need to be developed and/or formalized. An example is the site protective system of firebreaks and access roads.

Action Item #6: ATS 361.6 Develop a Subject Area that incorporates wildland fire safety aspect for BNL as a site (fire breaks, infrastructure "facilities" that are not normally considered conventional facilitates, controls on ignition sources, fuels management). (Deliverable: Subject Area, Target Date: February 25, 2002, Responsibility: Joe Levesque, Cost: 280 person hours).

4. Ensure that fire and emergency response plans and procedures adequately address wildland fires.

As a high-level management document, the BNL Site Emergency Plan (<http://www.bnl.gov/emergencyservices/E-Plan/Chapter%2001.pdf>) documents the BNL Emergency Management Program. It describes the organization, facilities and procedures used to protect employees, the public, environment, and emergency workers. Within the Site Emergency Plan, categories of unplanned events are described along with levels of management involvement and resources to aid mitigation.

In a separate document Emergency Action Levels (EALs) are defined and correlate to the BNL Site Emergency Plan. Fire, and specifically wildland fires (known locally as brushfires), are addressed within "Group I 2" (see <http://www.bnl.gov/emergencyservices/files/doc/eals.doc>).

A key feature of the fire related aspects of the Site Emergency Plan is the establishment of a mutual aid agreement with Suffolk County Fire/Rescue and Emergency Service participants. The Suffolk County Mutual Aid Agreement encompasses over 100 fire departments in Suffolk County. This agreement was most recently reaffirmed on May 18, 1999².

Fire departments within Suffolk County are trained on fighting "brushfires" at a regional training center. The Long Island methods are appropriate for the terrain and wildland vegetation on Long Island. BNL follows Suffolk County training. This training differs from national wildfire training methods. The major difference between the national and local approaches centers on equipment. Suffolk County relies on suppression, using vehicle entry into the woods. National standards focus on manual, on foot efforts, to contain fires (fire lines, fire breaks, back fires). The New York State Forest Service is a participant within the Suffolk County Mutual Aid Agreement. NYS Forest Service trains to national standards. They can compliment the normal Suffolk County response in prolonged incidents. Municipal departments normally obtain State support when fires occur on State property. To strengthen NYS Forest Service support to fire involving BNL Federal lands, a separate Memorandum of Understanding should be pursued.

² Letter from Warren Horst, Chief Marshal, County of Suffolk, Department of Fire, Rescue, and Emergency Services, dated May 18, 1999, to Chief James Roesler, Brookhaven National Laboratory Fire/Rescue Group

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Action Item # 7: ATS 361.1.7 Explore strengthening the mutual aid agreement with the New York State Forest Service. (Deliverable: Memorandum of Agreement or affirmation of existing Mutual Aid mechanisms, Target Date: April 2, 2001, Responsibility: Joe Levesque, Cost: 10 person hours).

Furthering the Wildland Fire preparedness to operational levels within BNL, the Emergency Services Division has developed a procedure in Wildland Fire Response. The Wildland Fire Procedure is currently in final draft.

Action Item # 8: ATS 361.1.8 Finalize the Wildland Fire Response procedure for BNL. (Deliverable: Wildland Fire Response Procedure, Target Date: April 30, 2001, Responsibility: Frank Marotta, Cost: 60 person hours).

5. *Conduct drills and exercises on wildland fire scenarios with fire and emergency response organizations that would be involved in responding to a major wildland fire at the site.*

BNL has included wildland fires in the development of drill scenarios for several years. On April 2, 1999, BNL conducted a full field drill exercise simulating a wildland fire threatening BNL from off site. On June 4, 1999 BNL conducted a wildland fire exercise simulating a wildland fire threatening the new Waste Management Facility. Drill reports are on file for these exercises. Approximately 7 years ago a drill was held simulating a fire involving the former Hazardous Waste Management Facility (records are not available for this drill). Routinely through the year BNL participates in Mutual Aid requests for wildland fires. These are documented in the BNL Annual Fire and Property Damage Reports, Appendix B for 1998 (8 mutual aid requests) and 1999 (7 mutual aid requests). BNL annual reports are located at <http://www.bnl.gov/emergencyservices/fpe.htm>. Prior years were not recorded in annual reports. During 2000, BNL requested mutual aid assistance for a series of brush fires on the northeast section of the site.

In addition to drills and routine fires, BNL Fire/Rescue has assisted Suffolk County Fire Departments in wildland fires. The major wildland fires were the Rocky Point Wildland Fire and Southampton Sunrise Fires of 1995. Both incidents challenged the mutual aid systems in the Suffolk County by requiring resources from over 30 departments and commitments. The Rocky Point fire lasted three days and the Southampton Fire lasted five days. BNL resources participated in both of those events.

This item does not require action at this time.

6. *Implement or expand fire safety and emergency management self-assessments to include wildland fire prevention and response capabilities.*

As part of the preparation of this action plan report, an overall self-assessment of the management systems was performed regarding the wildland fire issues. The preceding text reviews the program and the needed action items for improvement.

In a November 15, 2000 Memo titled "Self-Assessment of Emergency Services CY 2000" from Frank Marotta, Manager of BNL Emergency Services, to Tom Sheridan, Deputy Director for Operations, the need for a wildland fire safety self assessment was identified. A detailed facility specific self-assessment is being prepared as previously identified in Action Item #4.

With the definition of wildland fire issues within the Hazard Assessment, Facility Safety, and Facility and Operations Management Systems, periodic self-assessments will be conducted as part of the overall management system assessments. The self-assessment program can be found at <https://sbms.bnl.gov/standard/1g/1g00t011.htm>

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No further action is planned on this item.

- 7. Implement appropriate actions to address applicable lessons learned from the CY 2000 wildland fires (compiled in Appendix B of the report).*

The BNL Assistant Laboratory Director for Facility and Operations at BNL is establishing a review committee. The Wildland Fire Lessons Learned Committee will be charged by March 21, 2001, with the report published by April 12, 2001.

Action Item #9: ATS 361.1.9 Establish a Wildland Lessons Learned Committee to review and report on lessons learned applied to BNL. (Deliverable: Wildland Fire Lessons Learned Report, Target Date: April 2, 2001, Responsibility: Joe Levesque, Committee Chair, Cost: 60 person hours).

Closure and Verification

When action items have been completed and internally verified by BNL, the DOE Area Office will be notified for final verification and closure of this action plan.