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INSTRUCTOR:

LESSON: Wildland Fire Decision Support System

COURSE: S-430 Operation Section Chief (OSC)
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Emphasis: introduce concepts of WFDSS decision support and available information that could assist an OSC in seeing the big picture and developing appropriate tactical plans. Introduce process and adherence to WFDSS decision in managing an incident

OBJECTIVES:

Upon completion of this lesson, participants will be able to:

1. Describe the Wildland Fire Decision Support System (WFDSS).

2. Identify the OSC role in providing or utilizing information contained within WFDSS.

3. Identify important information that can be found in the WFDSS decision

I.   INTRODUCTION

WFDSS is designed to establish a process that allows for strategic decision documentation, decision support, and facilitation of operational management plan (either short- or long-term) preparation. The WFDSS process is linear, scalable, and progressively responsive to changing fire complexity and provide one decision analysis and documentation process for all types of wildland fires. WFDSS provides a platform for risk informed decision process.

Documentation and analysis of wildland fire suppression decisions has been required by federal agency policy for nearly 30 years. The 2009 Policy Implementation Guidance required;

> "Managers will use a decision support process to guide and document wildfire decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationale for those decisions."

The Wildland Fire Decision Support System (WFDSS) has been developed to meet this need. The Forest Service (FS), Fish and Wildlife Service (FWS), and Bureau of Indian Affairs (BIA) enter all fires into WFDSS, regardless of size. National Park Service (NPS) and Bureau of Land Management (BLM) enter fires into WFDSS only when it escapes initial attack. State and local agencies who use WFDSS vary in how WFDSS is used. Decisions for an incident are scalable according to incident complexity. At 98% initial attack success, we may not need a lot of analysis to inform a decision. As incidents escape initial attack or are managed for multiple objectives more analysis is needed to inform the decision.

It is recommended that a decision be considered if;

- Wildland fires are no longer following the initial action defined by the Fire Management Plan, or
- Fire continues to actively spread beyond a few burning periods, or
- Wildland fires are being managed or considered for multiple objectives, or
- Prescribed fires exceed prescriptions and are declared wildfires

Decision-making associated with managing wildland fire can have critical impacts. It is important to make the highest quality informed decisions possible facilitated by factual information and prediction of the range of outcomes and associated consequences of the decision. Publishing a decision provides documentation of the management action taken on the fire and the rationale behind it which will provide support if the fire is litigated in the future.

What is WFDSS?
WFDSS is designed to be consistent with accepted models of risk-informed decision making. WFDSS is a system that allows users to acquire information, analyze that information, apply that information to inform their decision and gain situational awareness, then to archive the decision and the documentation. To accomplish this, WFDSS maximizes the use of appropriately-based deliberation as well as analysis. It is an iterative, information-goal directed process.

- **Risk–informed decision making -** requires two distinct but linked processes:

    1. **Analysis:**
        o Rigorous, replicable methods to provide information about factual questions.
        o Brings new information into the process – **informs deliberation.**

    2. **Deliberation:**
        o Discussion, reflection, and persuasion to communicate, raise, and collectively consider issues, increase understanding, and facilitate substantive decisions.
        o Brings new insights, questions, and problem formulations – **frames analysis**.

Examples of decision making at this level involve developing a strategic alternative and objectives for a wildfire incident; consider a range of values, hazards and probabilities and focus on longer time periods. They are usually completed at least once, but may require revision, adjustment or a completely new decision as the incident evolves and conditions change.

II.   YOUR ROLE IN WFDSS

The hosting unit may not have completed a WFDSS Decision when you arrive, as an OSC you may be asked to provide input to develop, amend, or implement the decision. Knowledge and understanding of the risk decision processes will be critical. Many incident management teams have added the position of Planning Operations Section Chief (Planning Ops) to better facilitate incident planning. It is essential that you understand the WFDSS decision and operate within its guidelines as it truly represents the unit's management strategy and should be the reference with which the team manages the incident.
The OSC should review the WFDSS decision to understand Incident Objectives and Requirements, Strategic Objectives, Management Requirements, Management Action Points and insure tactical actions are in compliance with the decision. Review the Planning Area it

delineates the area that has been considered in planning process for the decision. If the fire is likely to burn outside this area or if fire operations will take place outside that area the decision will need to be amended or a new decision published.

What are the values at risk? What is the hosting unit concerned about? These values at risk may be specifically addressed in the decision, or may be viewed on the WFDSS Situation Map and assessed by reviewing the Spatial Inventory for the Planning Area or a fire behavior assessment or a Values at Risk may be available if an FSPro assessment has been completed. It's important the OSC understand changing conditions on the incident that require a modification to the decision, or a new decision. Such conditions may include, but are not limited to:

- Fire has or is expected to burn outside the Planning Area.
- The Strategic objectives, management requirements, incident objectives or incident requirements defined in the WFDSS decision can no longer be met, or are inadequate.
- The fire behavior or complexity has changed significantly, or weather forecast indicates a significant change in conditions is expected.
- Is there fire activity from a nearby fire that may influence the safety of firefighters and/or the public?
- Is the current management organization adequate or is the span of control exceeded?
- Has the estimated overall costs of the wildfire been or are expected to be exceeded due to an increase in fire activity and/or complexity?
- Has there been a significant change in social or political issues?
- Are there any other factors or issues that may influence the original decision?

Modifying or uploading any data to the decision should be coordinated with the local unit or the individual responsible for maintaining the WFDSS decision.

III.   Information Found in WFDSS

WFDSS is divided into 8 subsections represented by tabs within the program. These sections are: Information, Situation, Objectives, Courses of Action, Validation, Decisions, Periodic Assessment, and Reports. The WFDSSS system is updated from time to time, menu options may change. The basic function of each tab will remain the same. A summary of the most recent revisions to WFDSS can be found on the main login page. Tutorials, Help files and contact numbers for WFDSS support can also be found on this page and do not require a WFDSS account password to access them. http://wfdss.usgs.gov/wfdss/WFDSS_Home.shtml

Information
Purpose: Documents the initial and continuing fire situation, and provides required information to complete administrative fire reporting.

Information includes: Incident Name, Point of Origin, Unique Fire Identifier, Fire Code, Fire Perimeter / Incident Size, Discovery Date, Containment Date, Controlled Date, Out Date, Landscape Data Source, Geographic Area, Responsible Unit at Point of Origin, Incident Cause, Fire of National Significance, and Jurisdictional Agency at Point of Origin.

Situation
Purpose: Provides situational and risk assessment information to support strategic decisions and development of course of action. This tab features a map view to display most of the information in a spatially explicit format. Natural and manmade resource information can be toggled on and off to assess values at risk. Information includes:

Map (sub tab) has several spatial layers available:
- Base Layers- WFDSS Topos, Google Maps, Google Physical, U.S. States;
- Incident- Planning Areas, Fire Perimeters, Management Action Points, Points of Interest, Objective Shapes, Point of Origin;
- Analysis- Ignitions, Barriers, Landscape Masks, Basic Fire Behavior, Short Term Fire Behavior, Near Term Fire Behavior, FSPro (Values at Risk);
- Fire Environment and Safety- Incidents (adjacent, within map view), Active Planning Areas (adjacent), Active MODIS 6, 12, and 24 hour and Year to Date, Estimated Ground Evacuation Time, Retardant Avoidance, Aquatic Retardant Avoidance.
- Disturbance History - Fires since January of current year, Historical Wildfires, Fuel Treatment.
- Fire Weather and Danger – Significant Fire Potential, Fire Weather Forecast Zones, RAWS Stations.
- Boundaries- Jurisdictional Agency, Responsible Agency, Federal Administrative Areas, The Nature Conservancy Lands, County lines, Landscape Source.
- Designated Areas- Wilderness, Potential Wilderness, Special, Other, BLM.
- Infrastructure- Facilities, Communication, Energy, Roads and Trails;
- Natural and Cultural Resources- Air Quality, Critical Habitat (T&E), Sage Grouse Habitat.
- Unit Fire Planning Shapes – Fire Management Units

Info (sub tab) – the user can access:
- Feature Information
- Fire Danger (ERC charts)
- Smoke Dispersion
- Strategic Objectives
- Fire Weather Forecasts
- Predictive Services Significant Fire Potential
- Hourly Weather Forecasts
- Landscape file information such as Source, Elevation, Aspect, Slope, Fuel Model, Canopy Cover, Canopy Bulk Density, Stand Height, Canopy Base Height.

Menu (sub tab) – the user can access:
- Fire Behavior Request feature
- Stratified Cost Index
- Wildland Fire Risk & Complexity Assessment
- Fire Management Unit and Strategic Objectives
- Management Action Points
- Shape Upload feature
- Image Upload feature
- Point of Origin values Inventory
- Incident KMZ download feature
- Download Perimeters feature

- Contact Information feature
- Incident Privileges
- Incident History List
- Incident Analyses
- Fire Related Links

Objectives
Purpose: Defines objectives as stated in Land, Resource, and Fire Management Plans. This information is loaded prior to the fire season as provided in the LRMP and FMPs. If spatially enabled, this list will be reflective of the fire location and the relevant plan information.
The Objectives tab also lists specific management and incident requirements that will frame and influence strategic decisions and tactical implementation.

Course of Action
Purpose: Defines a specific course of action ranging from a pre-planned initial response to an individualized response for a specific situation. Specificity varies with fire complexity and can include a defined planning area, management actions, resource commitments, and costs for the fire duration.

Validation
Purpose: Provides a review of the Situation, Objectives, and Course of Action to ensure that Objectives can be met, and in the event they cannot be met, the Validation guides the development of a new Course of Action. This section will include the Approvers justification for accepting or rejecting the Course of Action.

Decision Summary
Purpose: Documents the response decision, the rationale for that decision, and stipulates the timeframe for revisiting and reassessing the decision. Depending on your Incident Privileges in WFDSS you may be able to view published decisions only. A new Decision must be made if updated information or findings are to be documented.

Periodic Assessment
Purpose: Provides a process to periodically review the current decision, response, and accomplishments to evaluate effectiveness and confirm accuracy or, if needed, indicate progression to a higher response level and associated planning activities.

WFDSS User Roles and Incident Privileges
User Roles within WFDSS correspond to permissions which allow users to perform certain tasks within the application, such as creating an incident or conducting fire behavior analysis. Typical User Roles are Viewer, Dispatcher, Author, Data Manager, and Fire Behavior Specialist. A user account can be requested from the WFDSS Home Page by selecting the Request Account tab.
http://wfdss.usgs.gov/wfdss/WFDSS_Home.shtml

Incident privileges are assigned at the time of (and are specific to) an incident. These privileges allow you to Own, Edit, Review, or Approve decision content. Modifying or uploading any data to the decision should be coordinated with the local unit or the individual responsible for maintaining the WFDSS decision.

Training aids are available on the WFDSS site on the Training tab to help users become familiar with navigating in the program. http://wfdss.usgs.gov/wfdss/WFDSS_Training.shtml WFDSS 101 series is an excellent source for learning how to use WFDSS.

Exercise
Review the Wesley WFDSS 2012 Decision look at the various decision elements. Assess the Planning Area, Incident Objectives and Requirements, Strategic Objectives, Management Requirements, and Management Action Points. Is sufficient information provided in the decision to guide the development of tactical plans? It is recommended that you access the Wesley 2012 incident in the production site on WFDSS http://wfdss.usgs.gov/wfdss/WFDSS_Home.shtml The Wesley_092212_1214_Decision PDF may be used if access to WFDSS is not available.

WFDSS Resources
Numerous models and tools are available within WFDSS to assist with the above mentioned functional areas.

Models in WFDSS
- Fire Behavior and Fire Spread Models (Basic, Short Term, Near Term, FSPro)
- Stratified Cost Index (SCI)
- Wildland Fire Air Quality Tools Smoke Models**

Tools in WFDSS
- Risk and Complexity Assessment
- Fire Danger Graphs
- Weather forecasts
- Values Inventory
- KMZ downloads

There are readily available technical experts that can assist in running these models and interpreting outputs for your incident. These models can and should be used to support decision making and are often incorporated in to the decision documentation.

On large, complex wildfires the Strategic Operational Planner (SOPL) position may be assigned to the Incident Management Team to work with the Operations and Planning Sections in developing a long-term course of action. SOPL's are specifically trained in developing long-term plans for wildland fires, and are useful on any wildland fire lasting more than three days regardless of the incident's strategic objectives (protection and/or resource benefit).

IV. SUMMARY

Management of wildland fire represents one of the most complex and highest risk activities in land management. Decision support and its contributions to decision-making are vital to fire management success. Decision support tools range from subjective information to quantitative long-term analysis processes and provide information to decision-makers. These tools and processes incorporate science and technology to assist in decision making based on the best available information.

Decision support allows managers the ability to reduce the amount of uncertainty surrounding the fire, understand the amount of difficulty that could be encountered during management and possible outcomes, develop management strategies and operational tactics and provide a common understanding and clearer explanation of the situation.

Your input to and understanding of the decision analysis can be key in the success of managing an incident and providing for firefighter safety.