DATA MANAGEMENT FOR INCIDENTS MANAGED AS A COMPLEX AND WILDFIRES THAT MERGE

Report and Recommendations

Data Management Committee Task Team

May 17, 2016

Executive Summary

Today, it is no longer enough for the wildland fire community to maintain a 95% initial-attack success rate. In the world of Big Data and federal open-data initiatives, wildland fire data needs to accurately reflect the activities on the ground. The quality and completeness of this data has far-reaching implications for planning, policy and budget purposes. Two areas where reporting requirements have not kept pace with these ground activities are complexes and merged wildfires.

Creating an incident complex allows an agency administrator to delegate management responsibility for multiple wildfires to a single incident management team (IMT) as a way to reduce overhead, increase efficiency and effectively utilize limited resources. In areas that experience a very active season – such as Alaska, the Pacific Northwest and the Northern Rockies did in 2015 – there is an increased likelihood that incidents will be complexed and that more than one active wildfire will burn into another active wildfire.

How the data is reported about an incident complex or a merged wildfire can affect communications with the public, cost accounting, decision processes for multi-agency coordination groups (MACs) and virtually every wildfire business area from dispatch to research during wildfire operations and for years to come.

The NWCG Executive Board tasked the Data Management Committee to facilitate a task group to develop common guidance for reporting incident complexes and merged wildfires. In October 2015, an interdisciplinary, interagency team met and, building on previous efforts, developed recommendations for more complete and consistent reporting. The task group recommendations include:

- For Incident Complexes:
  - Adopt FEMA's term - Incident Complex: An event established for management of two or more incidents in the same general area which are assigned to a single incident commander or unified command.
    - An Incident complex is not a wildfire incident and is not interchangeable with a wildfire record.
  - Update the Event Kind and Category Data Standard to include a category for complexes that will ensure the record is differentiated from wildfire records.
  - Adopt defined business rules for managing incident complex data.
  - Review scientific modeling capabilities to determine the impacts of adapting decision support processes for multiple incidents.
  - Utilize best practices for the use of FireCodes for cost accounting.
- For Merged Wildfires:

- Define Merged Wildfires: A situation that results when two or more wildfires burn together to form one burned area. (Operations and Training Committee April 2016)
- Add Merged Date and Merged Parent data to wildfire records to identify the relationship between two or more incident records.
- Allow perimeters for merged wildfires to reflect more than one Point of Origin.
- Enforce business rules for reporting which eliminates the risk of double-counting acres in operational and historical data sets.

- For both incident complexes and merged wildfires, modify the IT portfolio and enforce Computer Aided Dispatch (CAD) applications and the ICS209 as the only authoritative sources for creating and maintaining this data.

These recommendations will require a phased approach to fully implement. The most significant barrier is the time and funding to modify IT applications to enforce interagency business rules and processes. Enforcement of current requirements for data exchange via the Integrated Reporting of Wildland-Fire Information (IRWIN) along with consistent guidance, will improve reporting in 2016. This will allow agencies to update guidance and documentation, provide training, and fund remaining IT modifications for full implementation in 2017.

The task team is confident the recommendations in this report will assist the wildland fire agencies with more accurate and consistent reporting on incident complexes and merged wildfires for the public and local, regional and national decision makers.

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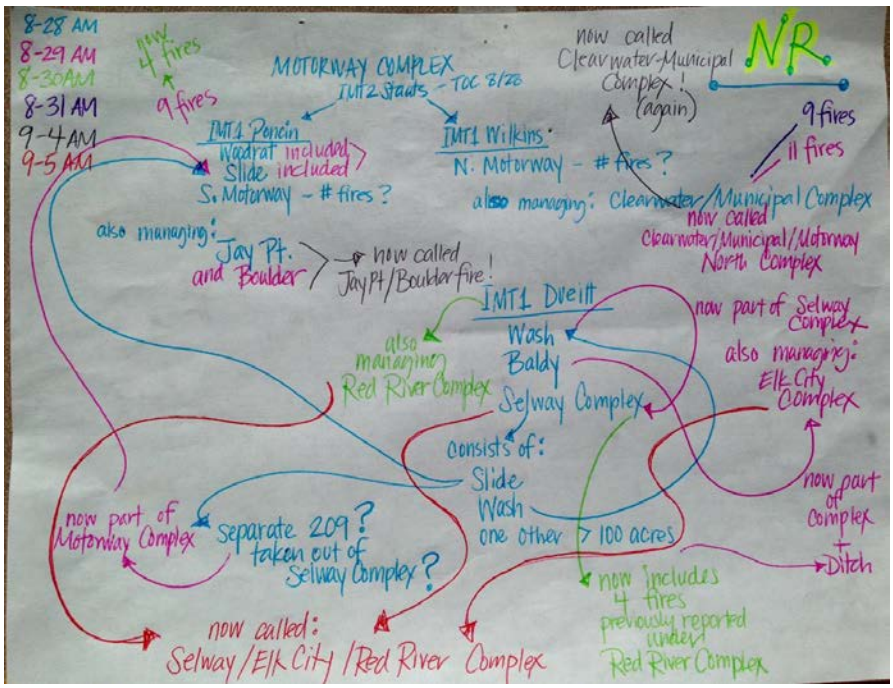
Introduction

They say a picture is worth a thousand words. This diagram was created in an attempt to track large wildfire reporting in an area of the Northern Rockies hit with consecutive lightning busts, including one day with over 100 new ignitions. Managers were doing their best to navigate a situation that was exponentially increasing in complexity.



As painful as this looks, the folks who lived it would probably say it is just the tip of the iceberg, because the "hard PL5" in August 2015 lasted more than six days. Reconciling the data, especially costs, will take months, if not years, to complete.

Unfortunately, the Northern Rockies' experience was not unique. As the demand for data and information about wildfire has grown, gaps in interagency guidance for reporting are amplified. The lack of consistent terminology and business rules results in a variety of reporting processes based on the needs of a single user community. Data that is important to a Multi-Agency Coordinating (MAC) group today may not make sense for the analyst using the data in five years to report on trends for a congressional inquiry. These data challenges are especially true for wildfires that are managed as a group called a complex and for wildfires that burn together.

Task Background

In 2009, the Interagency Incident Business Working Team (IIBWT) conducted an analysis of the challenges related to the use of complexes to manage multiple incidents and merged wildfires. Their report stated that:

"The complexity of managing multiple incidents within close physical proximity creates a challenge to maintaining the integrity of an individual incident. While, in the past, these types of events may have been rare, the extreme fire seasons of recent years have made them an all too common event. Currently, however, there is no policy or guidance on how to manage these types of complicated incidents concurrently with the need for increased accountability."

To begin addressing these issues, the IIBWT (now the Incident Business Committee - IBC) tasked a working group to evaluate complexes, merges and splits (CMS) and provide a framework for best practices in incident management.

In 2014, the Integrated Reporting of Wildland Fire Information (IRWIN) data exchange capability was implemented and provided data exchange between WildCAD 6.0, Integrated Fire Management (IFM), FireCode, ICS209, and Wildland Fire Decision Support System (WFDSS). The ICS209 also released a new version which included more robust capabilities for tracking complexes. These improved data capabilities identified the need for more clarification of business rules for complexes and merged wildfires to be implemented in the applications that support wildland fire.

In 2014, an interdisciplinary group began to address these issues. The group identified issues and provided some draft recommendations; however, as of 2015, their report was not finalized and their recommendations were not widely distributed or implemented. During the extremely active 2015 wildfire season, numerous issues related to complexes and merged wildfires were encountered, underscoring the need for consistent national guidance and refinement of data applications to support better reporting. On October 14 and 15, 2015 another task team was convened to begin this process.

Many of the issues identified by the IIBWT are still relevant today. Complexes, merges and splits affect the ability to enter, report, and use incident data in an accurate and useful manner. These issues span across all incident reporting processes and applications.

- Very limited interagency guidance and policy for reporting
- Lacking Best Practices for Data Management
- Limited IT System Flexibility
    - Current IT applications were designed to track individual incident, not CMS incidents. Some applications have some ways to identify complexes but they generally look like wildfire records.
- Incident Integrity

    - The data on an individual incident is not accurately maintained, making it difficult to use the incident record for analysis, and often results in double-counting acres burned.
- Geospatial data
    - As the wildland fire community's use of geospatial data matures, business rules applied to tabular data may not work as well when applied to data viewed on a map.

The task team built on previous efforts and maintained a focus on terminology and data management for incident complexes and merged wildfires. The following identifies desired outcomes for this tasking:

- Establish clear terminology and definitions for multiple wildfire incidents that are managed as a complex or are merged into a single incident.
- Develop consistent guidance that aligns data collection and data management across wildland fire Information Technology (IT) applications with operational management actions.
- Identify IT applications as Authoritative Data Sources for creating and managing data related to incident complexes and wildfires that merge.
    - This will include defining requirements for modifications to the application to support and enforce correct data management.
- Develop guidance for reporting perimeters and historical wildland fire occurrence for wildfires that merge.

Incident Complex Background

A long-standing challenge for complex reporting is the potential for counting the same burned acre more than once. For example, on October 2, 2015, on the NIFC web page, Railbelt, Minto Flats South, and Rex Creek were included in the list of Alaska wildfires greater than 100,000 acres. Minto Flats South and Rex Creek were actually individual wildfires in the Railbelt Complex. Only the most meticulous analyst with a clear understanding of wildfire reporting would know how to avoid double counting hundreds of thousands of acres in this example alone.

One reason for this difficulty is because the report for an incident complex and a wildfire incident look exactly the same. The only difference is the word "complex" is added to the name and some applications support a relationship between the incident complex and the member wildfires. However, because creating the relationship in the data isn't required, it also isn't consistent.

Purpose of an Incident Complex

The group discussed whether the ability to establish a complex of wildfires is needed at all. In many cases, the choice to create an incident complex seems to complicate management more than it simplifies. The consensus was that with consistent direction and modifications to data applications to support the process, a complex can be a useful construct for one or more of the following purposes:

Simplify Ordering

Creating an incident complex allows resources to be ordered on the complex rather than on individual incidents. Resources can then be moved among incidents within the complex as needed without generating additional resource orders. However, it should be noted that nothing prevents resources from being ordered on individual incidents and then shared with other incidents without the creation of an incident complex today.

Simplify Cost Apportionment

There are numerous strategies for apportioning costs between incidents being managed by a single organization.

An incident complex allows a management organization to charge costs that are difficult to assign to a specific incident (Incident Management Team (IMT), shower units, caterers, etc.) to an incident complex code. The costs can then be apportioned among incidents once a clear strategy for doing so is evident (e.g., percent of effort, acres burned by jurisdiction).

It is critical to understand the options for cost accounting and the implication of each option on both operational and historical data. **The task team highly recommends that an Incident Business Advisor (IBA) is consulted before a decision is made to form an incident complex.**

Simplify ICS Incident Reporting

An incident complex can be used to reduce the number of ICS209 Incident Status Reports a Unit or incident management organization is required to produce. By allowing an IMT to focus on a single incident complex ICS209 for each reporting period instead of multiple ICS209s for individual incidents, workload and redundancy can be reduced and the quality of reporting can be improved. Unfortunately, current application functionality makes it difficult to extract incident-specific data from an ICS209 for an incident complex.

Simplify Incident Decision & Decision Support Processes

Currently, WFDSS direction recommends that decisions and decision support analyses be incident specific. However, when incidents are in close proximity, it is difficult and/or redundant to develop decisions and analyses independently. A single decision for a group of wildfires may make sense whether or not the incidents have been included as part of an incident complex.

The members of the task group agreed that changing the business rules in WFDSS for groups was not possible at the meeting. However, there is a fair amount of frustration in the community with the issue and people are passionate about their position. This is an area where science and operations need to have some more extensive conversations and find ways to develop effective analysis and decision documentation on groups of incidents, whether they are included as part of an incident complex created outside of WFDSS or not.

Incident Complex Issues and Recommendations

Terminology

Currently, two NWCG Wildland Fire Glossary entries address complex. “Complex Incident” is a confusing term that can be interpreted either as defined (multiple incidents), or as a single incident with high complexity. “Fire Concentration Complex” is also confusing because it doesn’t have a clear correlation with the primary purposes of complexes identified by the task team.

Terminology Recommendations:

- Remove from published glossary (or redefine to reflect the complexity of an incident)
  - *Complex Incident* (9/2002): Two or more individual incidents located in the same general area which are assigned to a single incident commander or unified command.
- Modify current term and definitions in published glossary
  - Fire Concentration ~~Complex~~ (9/2002): Generally, a situation in which numerous *wild*fires are burning in a locality. More specifically, the number of *wild*fires per unit area or locality for a given period, generally a year.
  - Remove “complex” from the term, change fires to wildfires
- Add New Term and Definition to published glossary
  - Incident Complex: An event established for management of two or more incidents in the same general area which are assigned to a single incident commander or unified command.

    Definition Extension: An Incident Commander or Incident Management Team may manage multiple wildfires without creating an incident complex.

  - The term “incident complex” more accurately describes a container for multiple individual incidents and aligns with FEMA ICS terminology.
  - The FEMA ICS definition of an incident complex includes guidance on how the incident complex and assigned incidents fit in the overall ICS structure.

Incident Complex Business Rules

The decision to create an incident complex is a management action in response to wildfire activity on the ground. An incident complex is not a wildfire itself and should not be treated as a wildfire incident. It is best thought of as a *container* for individual wildfire incidents and, as such, has unique data requirements.

The incident complex data rules and IT implementation must be flexible enough to accept input at both the wildfire incident and incident complex level and allow for output and reporting that reflects the status of the individual incidents, as well as the complex container, without double-reporting information.

NOTE: *To frame the discussion about incident complexes, the task team has adopted the terms "parent" and "child". These terms refer to a hierarchical data construct that provides guidelines about the relationships represented. For example, we can say a parent record can have multiple children, but a child record can only have one parent at any given time. The Intel community has been using these terms and people are becoming familiar with them. This also makes it easier for the IT project managers and developers to understand how the business wants these records to be related which assists with effective implementation. For the purposes of this report, an incident complex is always a parent record.*

Data Standards

Currently, records are identified as an incident complex by checking a box on a wildfire incident record in an application. The task group recommendation that an incident complex has unique data requirements dictates that applications have to treat them as a separate record type and not as an incident record.

- The NWCG Data Standard for Event Kind/Category will be updated to include "CX" under the Event Kind: Fire (FI) to identify incident complexes.
    - An incident complex record must be created as a CX and can never be converted to a wildfire (WF) record.
    - A wildfire (WF) record can never be converted to an incident complex (CX).
        - Reference NMAC memo 2015-5: The complex parent is a unique record and is NOT a converted wildland fire incident record.

Incident Complex Naming Conventions

The use of the CX Event Category makes managing the data easier for the IT applications, but this is not an attribute the average user would expect to see on an incident complex record. Therefore, clearly identifying incident complexes for people seems to fall back on the incident complex name. The following requirements will improve the validity and reliability of the use of name for this purpose.

- The incident complex name must include the word “Complex”. (This could potentially be automated by the application when the record type is selected.)
- An incident record with the word “complex” in the name that is not identified as a Complex Event Category will be considered an error and will require correction.
    - Correction will likely include creating an incident complex following the rules outlined here and deleting the incorrect record.
    - Automation of this error checking should be explored for any or all applications creating incident complex records.
- An incident complex must not be named after an existing wildfire.
    - i.e., if West Fork is a child wildfire in the incident complex, the incident complex would not be named West Fork Complex.

Incident Complex Characteristics

As a unique record type, incident complex characteristics vary from historical wildfire incident records.

- Does not have a location (Lat/Long) because it is a management tool, not an event on the ground.
    - The centroid of the incidents in the complex will be used to represent the incident complex on a map.
- Does not have a start date/time.
    - There will be a date/time associated with the administrative creation of the incident complex record in an authoritative application.
- The incident complex must have one and only one Unique Fire ID (Year + Unit ID + Local Incident Identifier), which cannot be shared with any other record, including child incidents within the Incident complex.
- An incident complex record must have at least two child wildfire incidents at the time of creation.
- There is no limit to the number of individual child incidents that can be included in an incident complex.
- Any child incident may join and withdraw from an incident complex independently from other incidents, although this should not be a common occurrence.
- Child incidents may participate in more than one incident complex during their lifetime, though at any given time they may only participate in a single incident complex.
- Each child incident in an incident complex will have its own Unique Fire ID.

Authoritative Data Sources (ADS) for Incident Complexes

Incident complexes are appropriately named – they are complex. Given the recent experiences in the Northwest and Northern Rockies, there is potential for incident complexes to be created, reconfigured, or deconstructed (remember the diagram?). Currently, the incident complex “check box” exists in several applications including CADs,

ICS209, FireCode, ROSS, e-ISuite and others. Each of these applications has its own way of associating an incident to the incident complex. Expecting users to keep all these incident complexes up to date in all these applications is unrealistic.

An example is the County Line 2 fire in Oregon. At one point, because FireCode and ICS209 weren't sharing incident complex data, ICS209 showed a single wildfire in the incident complex while FireCode listed eight. Also, because the business rules were not consistently enforced, County Line 2 is identified as both a Parent and a Child of itself in ICS209. This makes it extremely difficult to correctly count burned acres.

The concept of an Authoritative Data Source allows the user community to focus on one or two applications to create and manage data about an incident or incident complex record. The data is then made available to other applications that need it for their business processes. This allows all applications to have the same incident complex and child records while minimizing the workload for the users.

The task group focused on the business processes and requirements before they addressed Authoritative Data Sources. As a result, consensus on the ADS was remarkably quick. CADs were the overwhelming ADS of choice, with ICS209 being identified as an alternative only because not all wildland fire areas have access to a CAD today.

- Computer Aided Dispatch (CAD) is the primary, preferred ADS for incident complex record creation and management
    - If no CAD is available, ICS209 is the alternative ADS
    - The desired future state is that all other applications read incident complex data from these ADSs and not allow users to create or change the data in their own user interface.
- CADs and ICS209 must be modified to:
    - Recognize that an incident complex record is not the same as a wildfire incident record and collect different data. (See draft data requirements in Table 1 below).
    - Only allow incident complex records to be created as a Complex Event Category.
    - Allow individual incidents to be added to and removed from an incident complex.
- ICS209 will be used to capture and update data for each child incident to be summed or rolled up in the incident complex ICS209 report.
    - ICS209 currently captures some data this way, but the task team is recommending that the data fields be expanded to better maintain key individual incident data.
- CADs and ICS209 must share incident complex data with other applications via the IRWIN data exchange capability.
- CADs and ICS209 must read incident complex data from each other via the IRWIN data exchange capability.

Incident Complex Costs

The largest, most expensive wildfires tend to be included in an incident complex. Unfortunately, the way we have handled the data for incident complexes means these are often the most difficult to accurately account for costs. Improving the way incident complex and child incident data is managed is critical to begin easing the cost accounting burden currently impacting IBAs.

There are three scenarios for associating cost codes with an incident complex. Scenarios 1 & 2 are considered Best Practices:

1. Best Practice: Each child incident has and charges to its own code and there is no incident complex code generated.
    a. This provides the most accurate reflection of child incident costs which can be important for cost apportionment, reporting and future planning efforts.
2. Best Practice: Each child incident has and charges to its own code and, in addition, a new incident complex code is generated.
    a. If any costs will be charged to the incident complex instead of to child incidents, the incident complex should have a unique FireCode that was not previously assigned to an incident.
    b. Costs that are difficult to break out by incident can be charged to the incident complex.
    c. This hybrid approach simplifies cost accounting for shared costs and still allows actual costs to be charged to child incidents when known.
    d. The agency responsible for the incident complex will determine how to distribute shared costs among incidents.
        i. If the incident complex includes multiple jurisdictions, the agencies will coordinate on how to apportion costs.
3. All costs are charged to an incident complex cost code.
    a. Existing cost codes associated with a child incident are no longer used once the incident is assigned to an incident complex.
    b. This makes cost accounting very simple operationally but can result in significant challenges from a historical perspective.
        i. It will be difficult for agencies to determine the cost of an individual incidents because the charges were combined.
        ii. This option does not meet the recommendations of NWCG memo #014-2011. "…Maintain the data and financial integrity of individual incidents: a. When complexing incidents, maintain individual FireCodes and ROSS incidents for each incident within the complex..." (http://www.nwcg.gov/sites/default/files/memos/eb-m-11-014.pdf)

NOTE FOR THE FIRECODE APPLICATION ONLY: The FireCode application enforces a one to one relationship between a FireCode record for an incident and a FireCode record for an incident complex. FS uses a single firecode for ABCD Misc incidents from year to year. This creates two issues for the FireCode application. 1) If multiple incidents are using the same ABCD Misc firecode, only one can be assigned to an incident complex in the FireCode application. 2) In the FireCode application, some of these ABCD Misc firecodes have been assigned to a FireCode incident complex record in the past and cannot be assigned to a current incident complex unless it is removed from the historical record.

The FireCode application only cares about incidents that have a unique FireCode. Because FS does not require a unique FireCode for every incident, there will be situations where a CAD or ICS209 will have one or more ABCD Misc incident(s) included in an incident complex that are not represented in the FireCode application. This is valid and simply means that an incident complex in the FireCode application may be a sub-set of the incident complex.

Introduction for Merged Wildfires

Generally speaking, the task group found that, from a data perspective, merged wildfires were very similar to incident complexes even though merged wildfires reflect an event on the ground rather than a management tool. The task group recommendations clarify the use of existing data and add two key data elements that make the merged wildfire story easier to understand. They also applied the parent/child record relationship concept to merged wildfires. There are a few issues that need further consideration and they are defined in steps for implementation.

Background for Merged Wildfires

Merged wildfires result when two or more active wildfires burn together. When this occurred in the past, managers could declare the wildfires merged and adjust operations as needed to manage a single wildfire instead of two and just stop reporting on one. Most agencies and bureaus have final fire reporting guidance that indicates the acres for the merged wildfire at the time of the merge are reported as the final acres and the date of the merge is entered as the out date. Any new growth after that date is reported on the remaining active wildfire until it is declared out. Theoretically, this worked for final fire reports because all the math could be done after the fact. However, it is widely recognized that this method is prone to error and that burned acres are likely to be double counted.

In 2015, Alaska experienced an unprecedented number of large wildfires burning together. On several occasions, a wildfire that consumed another was later consumed itself. Because these were large wildfires, multiple perimeters were processed on each one. When the wildfires merged, the final fire reporting business rules were applied to the perimeter display. This resulted in voids or “donut holes” in the active wildfire polygon where the “merged” wildfire had existed but was no longer being reported. On other wildfires, they had disconnected polygons where new growth occurred on the merged fire flank not adjacent to the remaining “reported” fire. To help manage the perimeter display and ICS209 reporting, Alaska Fire Service added an “Administrative Out Date” and a “Parent Fire” field to their Computer Aided Dispatch (CAD) application (FireBeans) to better track the evolution of wildfires represented by the perimeters.

The Alaska Interagency Coordination Center (AICC) drafted guidance for the State for the remainder of the 2015 season. This guidance was shared with the NWCG Fire Reporting and Geospatial Subcommittees who agreed national, interagency guidance was required to promote consistent reporting in both operational and historical reporting systems.

Merged Wildfires Issues and Recommendations

Merged Wildfires Terminology

There is currently no term describing merged wildfires in the NWCG Glossary. It is recommended that the following term/definition be added to the NWCG Glossary:

- Add New Term and Definition to published glossary

  Merged Wildfires: A situation that results when two or more wildfires burn together to form one burned area. (per Operations and Training Committee April 2016)

  Definition Extension: 1) Management can decide to declare wildfires as merged or not. 2) A merged wildfire requires a Merged Date and association with the remaining active wildfire, i.e. Merged Parent, to be identified correctly in operational and historical data.

***NOTE**: Merged wildfires as considered here are individual ignitions that burn together. The processes of merging incident records in ROSS, e-ISuite and other data systems are distinct from and unrelated to the concept of merged wildfires discussed here. For ROSS, read more about it here:*
http://ross.nwcg.gov/user_guide/merge_incidents_v216_2014_0324.pdf

Business Rules for Merged Wildfires

Data Standards for Merged Wildfires:

The Fire Reporting and Geospatial Subcommittees will review existing data standards that may be impacted by the addition of the Merged Date and Merged Parent fields and request changes as needed.

Merged Wildfires Characteristics

When two wildfires burn together, careful consideration must be given to the following factors when deciding which wildfire to keep active (the parent record), as there may be cost apportionment and/or administrative implications.

- Origin ownerships/jurisdictions.
- Pre-merge suppression effort and costs for each wildfire.

- Portions of the merged wildfire where post-merge growth is likely to occur.
- Jurisdictions likely to be affected by post-merge growth.
- Portions of the merged wildfire where post-merge suppression effort is likely to be applied.

When a merged wildfire includes multiple jurisdictions, all parties should be involved in the decision process.

In most cases, wildfires that burn together should be treated as a single incident following the "merge". Exceptions include:

- It may be administratively advantageous to separately manage two active wildfires that have burned together when
    - Management responsibility for the wildfires will remain distinct.
    - Management activity and post-merge growth (reported acres and perimeters) can be split based on an identified geographic or administrative feature (e.g., creek, Zone boundary).
    - Growth potential on both wildfires is high.
- If a decision is made to continue managing the wildfires independently, no change is made to the incident records.
- When an active wildfire burns into a current year wildfire that has already been called out, the wildfires should continue to be reported separately.

The decision to merge two or more wildfires makes the most sense when the growth potential is low for the wildfire identified as merged (or consumed). Once merged, the two (or more) wildfires are managed as a single incident.

- One fire is chosen as the "consuming" or active wildfire (the parent record), the other becomes the "consumed" or merged wildfire (the child record).
- An active wildfire can consume multiple, individual merged wildfires.
- An individual wildfire can only be merged with a single consuming active wildfire. (A child record can only have one merged wildfire parent record.)
- The record for the merged wildfire will be frozen at its last reported acreage and cost.
    - The record will be updated to include the Merged Date and the Merged Parent Wildfire.
    - The last reported perimeter of the merged wildfire will become the final perimeter for that incident and will include the Merged Date and Merged Parent Wildfire.
- Acres for the merged wildfire(s) and the consuming active wildfire will be summed and reported on the active wildfire.
    - All new growth will be reported on the active wildfire.
    - The active fire perimeter will include burned acres from both wildfires and will reflect all post-merge growth.

- The active fire perimeter will have two or more points of origin based on the wildfires consumed by it.

- To retain data integrity in ROSS and e-ISuite, resources from the “merged” or “consumed” wildfire should be transferred to the remaining, active wildfire.
  - Do not merge incident records in ROSS or e-ISuite for merged wildfires.
- When a consuming wildfire is called “out”, all of the wildfires it consumed will inherit that status and date.
  - The addition of the Merged Date allows a more accurate reflection of what occurred on the ground, including on-going wildfire and response activities.
  - Applying the out date based on the consuming active wildfire provides insight to the time that elapsed between the merge and the time that all wildfire activity on the ground ceased.
- Merged wildfires can be part of an incident complex and would follow the same business rules.
  - In this situation, the record would have an incident complex parent and a merged fire parent.

Controls must be added to CADs, ICS209, final fire reports and geospatial data sets and displays to ensure that acres of merged wildfires are not double counted in summary reports and statistics. The additional data elements and business rules recommended by the task group provide the data to do the necessary math, however, additional work is required to determine a standard process that can be applied across the board. Ideally, this standard method would be applied in all applications that provide this type of data to ensure consistency regardless of the user interface.

Authoritative Data Sources

Much like the incident complex discussion, once the business requirements for managing the data for merged wildfires were discussed, the ADSs were apparent.

- If the incidents will be merged, the data should updated in the CAD.
- If there is no CAD, merging should be initiated in ICS209.

Authoritative data sources identify the best source of data at a particular point in time. Some authoritative data sources are also Systems of Record (SOR). A SOR is recognized as the final, official data source. In wildland fire, the primary SOR is the Final Fire Report. Incident records in the final fire reporting applications have been validated and approved for use by an approving official. While CADs and ICS209 need to know how to manage data for merged fires during the incident, the final fire reporting applications will also have to be modified to include the Merged Date and Merged Parent Wildfire and ensure the logic exists to avoid double counting acres between a merged fire and its parent record.

- Validate and approve Merged Date and Merged Parent Wildfire in the Final Fire Report and GIS Fire Perimeter Data Standards.

- Validate and approve Merged Date and Merged Parent Wildfire in the Geospatial Fire Perimeter Data Standards, as well as accommodate 2 or more points of origin.

Implementation of Recommendations

Refined definitions and business rules are only valuable if they are implemented and communicated. Implementation requires that individual agencies adopt the definitions and business rules and that wildland fire applications are modified to support enforcement of the guidelines. This includes reviewing existing policies and guidance to adapt to improved reporting capabilities.

Steps to complete for implementation:

- Task Team provide draft report to the NWCG community for review and feedback.
    - Comments due February 10, 2016 – Completed
- Task Team review feedback and incorporate comments as necessary.
    - Review May 9, 2016
- Present Final Report NWCG Executive Board for acceptance.
    - May 2016 Executive Board Meeting
- Modify applications that handle data related to incident complexes and merged wildfires.
    - Applications include:

FireCode	IRWIN
ROSS	WFDSS
ICS209	e-Isuite
FIRESTAT	
Computer Aided Dispatch (CAD)	
Fire Management Information System (FMIS)	
WFMI Fire Reporting replacement	

Some of the task team recommendations require significant modification to existing applications. Given the time of year and the fact that many of the Forest Service applications are in the process of transitioning to new contract support, the recommended changes have been prioritized. There are some fairly simple modifications that could make a big difference for next fire season. Some of these have already been identified as requirements and work has been started. Approval of the report recommendations will help project teams ensure the work is completed for the 2016 season.

1. WildCAD and other CADs modified to create and edit incident complexes and merged wildfires.
    a. CADs should also be able to read updates to incident complexes from ICS209.

2. ICS209 complete work to read incident complex data from CADs via IRWIN.
3. FireCode complete work to read incident complex data from CADs or ICS209 via IRWIN.
4. All other applications (ROSS, WFDSS, EGP, etc.) to determine how they may use the incident complex and merged wildfire data in 2016.

With these modifications, supporting documentation and training, reporting on incident complexes and merged wildfires will be improved for 2016.

Remaining modifications for all applications should be completed no later than Dec 31, 2016.

- This provides time for planning and funding of modifications, especially the significant new requirements for ICS209.

Training users must be a priority. Interactions between various systems need to be understood by users of individual applications. Acceptance of the recommendations in this report has to include support for communications, outreach, and training for users. This can be accomplished through consistent messaging at spring meetings, training, SME meetings, NWCG Committees, and application user groups.

- Application user guides need to be updated to reflect the new guidance using common terms and business rules across the board.

Finally, no initial plan will address every issue -- improving data management takes time and attention. To facilitate ongoing improvements, the task group recommends the following assignments be documented as part of NWCG's annual work plans. Updates and deliverables will be provided to the NWCG Executive Board at least annually. These assignments will ensure the business guidance, tools and IT applications are available to support the wildfire community and our public when the next "hard PL5" hits.

Committee	Tasking (Annual Work Plan)	Deliverable	Due Date
NCSC (intel group)	Review 2015 NMAC reporting guidance and update as necessary to reflect recommendations in this report	Updated NMAC Memo	Completed: Reviewed and retained 2015 guidance.
DMC, IBC, NCSC	Monitor implementation of recommendations during 2016	Report of lessons learned, refined requirements for business processes and IT applications	November 2016
NCSC (intel group)	Finalize Appendix 1 data elements for ICS209 Incident complex records	Ensure new requirements are provided to ICS209 project teams for implementation in 2017	November 2016

Committee	Tasking (Annual Work Plan)	Deliverable	Due Date
IFPC	Meet with FS RD&A to review guidance for decision documentation for Incident complex records	Document results on the NWCG and WFDSS websites for reference	November 2016
IBC	Develop decision tree for Best Practice Scenarios for Incident complexes	Provide IBAs with support tool, update appropriate guidance and documents	November 2016
DMC	Review data standards and reporting requirements for Final Fire Reports and Wildfire Perimeters	Ensure the requirements for correctly reporting the number of ignitions and acres burned are defined in appropriate guidance documents (application user guides, handbooks, etc.).	November 2016
DMC, IBC, NCSC	Monitor implementation of recommendations during 2017	Report of lessons learned, refined requirements for business processes and IT applications	November 2017

Appendix 1

Incident Complex Parent and Child Record Data

In order to maintain data integrity as child wildfire records move in and out of an Incident complex, careful consideration must be given to which fields belong to an incident complex parent record and which fields belong to child records.

Task Team Recommended Data Elements for ICS209 Records

Individual Child Report Data	**Incident Complex Parent Report Data**
Incident Name	Complex Name
	Dispatch Center ID
	GACC
	Jurisdictional Unit & Agency
	Protection Unit & Agency
FireCode (optional)	FireCode (optional)
	FSJobCode (optional)
	FSOverrideCode (optional)
	Incident Management Organization
	Fire Management Complexity
	Incident Commander Name
Residences Destroyed	
Other Structures Destroyed	
	Total Residences Threatened
	Total Other Structures Threatened
Estimated Cost To Date	Sum of Estimated Cost To Date
Fatalities	Sum of Fatalities
Injuries	Sum of Injuries
Daily Acres	Sum of Daily Acres
Estimated Containment Date	Estimated Containment Date
Percent Contained	Percent Contained
Percent Perimeter To Be Contained	
	Total Incident Complex Personnel
	Significant Events
	Life, Safety, Health Remarks

Individual Child Report Data	Incident Complex Parent Report Data
	Weather Concerns
	Projected Activity 12 24 48 72 hrs.
	Strategic Objectives
	Strategic Discussion
	Threat Summary Risk Info 12 24 48 72 hrs.
	Critical Needs 12 24 48 72 hrs.
	Planned Actions
	ICS209 Remarks
	ICS209 Report For Time Period From
	ICS209 Report For Time Period To
	ICS209 Report Status
Complex Parent Unique Fire ID (assigned by CAD or 209)	Event Category: CX

Task Team Members:

Name	Agency(s)	Representing / Role
Andy Kirsch	NPS	Fire Reporting, NWCG Data Management Committee
Christine Peters	NPS	Incident Business, NWCG Incident Business Committee
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