The following document is a distillation of conversations myself and Todd Abel had with IMT members, Agency Administrators, and other incident personnel during the 2017 fire season as part of an NMAC tasking This is a draft document. Additional information regarding the observations made during assignments in Pacific Northwest will be added and further outreach with Agency Administrators who had experience with 3 or more IMTs during this season will be conducted. I am grateful for the open and honest feedback and IMTs general willingness to allow us to take up some of their limited discretionary time.

Respectfully,

Jayson Coil



RISK COMMUNICATION

A summary of Lessons Learned in the Southwest and Northern Rockies

Summary

This document is a collection of the items identified as the best practices Incident Management Team Members and Agency Administrators employed to improve risk management communication and aid in risk informed decision making. This improved communication is credited for building cohesion, mutual trust and creating a shared understanding. This increases their ability to meet incident objectives while eliminating unnecessary risk.

Jayson Coil/Todd Abel Members, NMAC Risk Management Communication Strategy for Incident Management Teams Task Group.

Acknowledgements

Since April, we have engaged with numerous Agency Administrators, seven Type 1 and Type 2 IMTs in the Southwest, and nine Type 1 and Type 2 IMTs in the Northern Rockies. We recognize their willingness to discuss their processes added to their workload and we want to thank them for sharing their time and the lessons they have learned.

We would also like to thank Bea Day, Steve Zachry, NMAC and the GMACs for the Northern Rockies and the Southwest for supporting our efforts and Christie Coil for editing the final product.

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Overview and Purpose

On January 20, 2017, the Coordinating Group Advisory Council (CGAC) approved Rob Allen to develop a task group to work on the following:

- 1. Gather baseline information regarding models used to communicate risk to Agency Administrators (AAs) by Incident Management Teams (IMTs).
- 2. Make a determination regarding the effectiveness and efficiency of the models and methodology used by IMTs to communicate risk.
- 3. Make a recommendation regarding the best management practices to communicate risk to AAs.

Jayson Coil and Todd Abel are members of the task group. During the 2017 fire season, they engaged with multiple Type 1 and Type 2 teams in the Southwest and the Northern Rockies. These engagements focused primarily on determining what barriers IMTs faced when communicating risk to AAs and what actions or processes they have credited for improving the effectiveness and efficiency of these communications. Additionally, Journeyman AAs were interviewed to determine what they saw as indicators of successful IMT/AA interaction and what conditions prompted them to increase their level of engagement.

The information contained within this report is preliminary and will be used as part of the final recommendation, which will be submitted to CGAC by the end of October. At the request of the Northern Rockies Multi Agency Coordination Group, who sponsored members of the task group while working in the Northern Rockies, this preliminary report has been created. We would like to recognize those individuals who supported our efforts and the IMTs and AAs who allowed us to engage them during a difficult and busy time.

Process and Methods

The main method used for collecting information was through interviews with agency administrators and members of the IMTs. All interviews took place while the IMTs and AAs were engaged on incidents. These interviews normally took less than a day to complete. In addition to interviews, information was collected by reviewing the IAPs, Delegation of Authority, Leaders Intent Letter, 215R, Incident Emergency Plan, Meeting Schedule, ICS-209s, MAPs, Prioritized List of VARs, WFDSS information and other documents relevant to the scope of the tasking.

After the interviews were completed and the information gathered, it was synthesized into a list of best practices. The NMAC Tasking was used as a guide for what information to include. A broad view was taken to ensure all identified means of risk communication where the adoption of a best practice would have a positive impact on the effectiveness or efficiency of risk communication were included.

Participants

Members of the IMTs interviewed included:

- Incident Commanders
- Operations Section Chiefs
- Safety Officers
- Medical Unit Leaders
- Plans Section Chiefs
- Situation Unit Leaders
- LTANs/FBANs/SOPLs/IMETs

Agency Administrators and members of Area Command were also interviewed during the process.

Summary of Findings

Note: There are multiple themes reinforced in the different outcomes outlined below. This is purposeful since none of this in meant to develop or suggest new incident objectives or challenge the appropriateness of the prioritization placed on values to be protected. Instead, these outcomes were selected because the IMTs utilizing them or the Agency Administrators who witnessed their application believed they contributed to their overall success. In this context, "best practice" is defined as procedures that are accepted as being most effective.

| 1 - Conduct Periodic Strategic Assessment with IMT & AA | | |
|---|---|--|
| Best Practice: | Engaged in Periodic Strategic Risk Assessments with IMTs and Agency | |
| | Administrators. | |
| Discussion: | Throughout our interactions with IMTs and AAs, there were multiple | |
| | examples of alignment between the AAs and the IMTs on the actions | |
| | being taken. There were also instances when alignment was lacking. | |
| | This led to several discussions on what it was felt contributed to this | |
| | shared understanding. It was also noted through a shared understanding | |
| | mutual trust was reinforced. These periodic strategic assessments were | |
| | also viewed as beneficial when ensuring a team's planning horizon was | |
| | far enough out that they were able to recognize when changes in | |
| | conditions could be used to their advantage and when it was still | |
| | necessary to maintain the current strategy. | |
| Recommendations: | In order to ensure coordination and a shared perspective on risk and the | |
| | criteria for an optimal outcome, periodic assessments should be held. | |
| | These strategic risk assessments would be a separate meeting specifically | |
| | designed to allow the IMT and AAs to step back from the | |
| | implementation mindset that is most prevalent when we are focused on | |
| | the how/when/where a strategy will be implemented. It is commonly | |
| | understood when we are focused on what needs to be accomplished to | |
| | meet outcomes we are less interested in gathering information unless it | |

| aids us in completing a predefined course of action. This induces a |
|---|
| closed mindset and we are more susceptible to biases. By creating |
| opportunities to transition back into a deliberative mindset through the |
| implementation of periodic strategic assessments, we can better avoid |
| biases and recognize the impacts of changing conditions. Further, we |
| foster mutual trust through a transparent exchange of ideas and |
| uncertainties. This ensures we remain calibrated to the environment, our |
| capabilities, and expectations. Unlike similar meetings only called when |
| an issue reaches the magnitude in which it must be addressed, these |
| meetings are a matter of course and allow all parties to candidly discuss |
| their concerns, ensure there is alignment, and validate the course of |
| action is universally supported. Through this process a shared |
| understanding is developed and the team becomes more cohesive and |
| better equipped to maintain an effective working relationship when the |
| adopted strategy proves ineffective at generating the desired outcomes. |

| 2 – Conduct Daily Deliberate Risk Assessment | |
|--|--|
| Best Practice: | Conducted a deliberate risk analysis (DRA) on actions for the next |
| | operational period daily. |
| Discussion: | The process by which the 215R or other risk analysis tools was |
| | developed and how it was implemented varied broadly among teams. |
| | Also, it was generally viewed as a tool for the AA so they had |
| | confidence the team was aware of, and taking steps to mitigate, the |
| | different hazards. A different approach was a morning DRA meeting |
| | where the different missions were discussed and the hazards associated |
| | with these missions were identified. This process focused on the planned |
| | actions for the next operational period and the mission. |
| Recommendations: | Engage in a specific meeting, which would provide the opportunity for a |
| | focused discussion on the hazards and mitigations of the next day's |
| | planned actions. The DRA is an excellent example of this type of |
| | process. |

| 3 – Utilize Multiple Methods to Increase Engagement on 215R | | |
|---|---|--|
| Best Practice: | Engaged in multiple communication avenues to ensure 215R was | |
| | representative of the actual exposures and mitigations. | |
| Discussion: | While many of the IMTs continued the traditional process of operations | |
| | and safety going through the 215R prior to the planning meeting, there | |
| | were a few teams who had taken a more active role in ensuring the 215R | |
| | was representative of the conditions firefighters were operating in and | |
| | that those facing the hazards had an opportunity to provide direct input to | |
| | the process. IMTs would place the 215R near the chow hall and invite | |
| | FFs to add to the list of hazards if there was something the team missed. | |
| | Another way to seek engagement was to include the high-ranking | |
| | hazards or those that could not be mitigated below a red in the IAP. This | |

| | could also include a couple blank lines for FFs to write in additional |
|------------------|--|
| | hazards faced and drop it off to the safety officer at the end of shift. The |
| | SOF1 on one IMT kept a detailed log of when the different hazards and |
| | mitigations were discussed with the line. Still others would hang a pen |
| | by the 215R and during the main operational briefing encourage FFs to |
| | go to the 215R after the briefing, review it, and add anything they |
| | thought was missing. |
| Recommendations: | Employ processes that allow for greater FF engagement in the |
| | development of the 215R, so the document regains relevance to the |
| | resources in the field. Also, share information to ensure a common |
| | understanding of the task exists between the IMT and those asked to |
| | carry out the assignment. This also provides an addition opportunity to |
| | identify new hazards. |

| 4 – Ensure Incident Documents Align with Delegation/Leaders Intent | |
|--|---|
| Best Practice: | Ensured Incident priorities, objectives, strategies and tactics align with |
| | the direction provided in Leaders Intent/Delegation of Authority. |
| Discussion: | During our outreach, we met with numerous agency administrators and discussed incidents where they felt like they had a strong sense of mutual trust with the IMT and other incidents where they believed mutual trust was lacking. We then explored the different cues in the low trust environments that caused them to become more concerned alignment did not exist to a satisfactory degree. In these conditions, the lack of alignment between the Leaders Intent/delegation of authority and the incident documents and briefings was the most common indicator. It was noted that sometimes more frequent communication resolved this alignment. Other times, the issue required constant oversite. Regardless of the degree to which the misalignment occurred it was often first noticed in one of the IMT products identified above. It was also noted that even when the documents are in alignment issues between the resources or overhead and operations can lead to misalignment. These manifested themselves in different ways including mixed messages at different division breakouts and A/G traffic that suggests actions in the field may not align with those discussed in briefing. Regardless of the exact item that causes an Agency Administrator to question how effectively the IMT strategy aligns with the delegation. |
| | realignment always included enhanced communications and the |
| | development of trust. |
| Recommendations: | IMTs and AAs should make a deliberate and focused effort to ensure the |
| | priorities outlined in the Leaders Intent and Delegation are understood |
| | and communicated effectively. This development of mutual trust is |
| | essential when tough decisions require both parties to share the risk. It |
| | also reduces the likelihood unnecessary actions will be undertaken that |
| | would lead to firefighters and aviators facing needless exposure. The |
| | effort undertaken to communicate risk, strategy, and intent needs to be |

| sincere. Establishing objectives or engaging in actions designed to |
|---|
| conciliate a person or group is not only ineffective, it often leads to |
| unnecessary exposure. Be direct, tactful, and honest about what can be |
| accomplished. |

| 5 – Aerial Suppression Use Should Align with Overall Strategy | |
|---|---|
| Best Practice: | When utilizing aerial suppression resources, IMT ensured that actions |
| | were aligned with the overall strategy and their use was discontinued |
| | when need had been met or their efforts were ineffective. |
| Discussion: | This topic led to substantial discussion. The use of aerial suppression |
| | resources where checking and holding actions were the mission was the |
| | area most of these discussions were focused. This is understandable |
| | when you consider the same action of flying retardant or dropping water |
| | to slow the fire's progression to a given point is undertaken in both |
| | instances. The following examples illustrate the difference. |
| | Example 1 – Utilizing airtankers and heavy helicopters, we are going to |
| | continue to check the fires spread to the Southwest until the indirect line |
| | can be completed. This is expected to take two days. |
| | Example 2 – We are going to continue to check and hold the fires growth |
| | to the Southwest with airtankers and heavy helicopters. |
| | In example 1 the task/purpose/endstate is clearly communicated. In |
| | example 2 there is no endstate. This lack of an endstate leads to |
| | discussion and possible scrutiny over the appropriateness of the actions |
| | being undertaken. It also makes it more difficult to engage in |
| | prioritization of resources or ensure the actions being undertaken align |
| 1 | with the planned actions. As discussed in #4, it can be difficult to |
| | develop mutual trust and have confidence incident priorities are aligned |
| | when the actions undertaken do not appear to tie back into the overall |
| | strategy. |
| Recommendations: | When utilizing aircraft, especially for checking and holding, ensure that |
| | you can articulate the task/purpose/endstate. Avoid utilizing aircraft to |
| | continue to check fire spread after the objectives have been met. |
| | Maintain an open and honest dialogue between AAs/IMTs/Resources to |
| | ensure leaders intent regarding aviation use is clearly understood. |

| 6 – Naming of Control Lines Should Be Thoughtful & Deliberate | |
|---|---|
| Best Practice: | Recognized how the way the PACE model was applied could impact the |
| | perceived incident priorities, especially when the primary effort was |
| | being placed on indirect line construction. |
| Discussion: | The words used to describe different lines on different incidents certainly |
| | affected the perceived importance a line held on that incident. For |

| | example, if the strategy is indirect and after careful consideration and |
|------------------|--|
| | communication with stakeholders and agency administrators you select a |
| | line immediately adjacent to the VARs, your delegation identifies as a |
| | high priority. You scout this line and determine this location has the |
| | highest probability of allowing you to protect the VARs and the level of |
| | exposure is acceptable. There were two different schools of thought on |
| | how to describe this line. The choice made in how to describe the line |
| | significantly changed the perception of those involved. One approach |
| | was to label this the primary line and acknowledge this line has the |
| | highest probability of success of meeting the objectives. |
| | The other approach was to label this line the contingency line because it |
| | was immediately adjacent to the values and there was hope that a more |
| | direct option would be identified. This more direct line location would |
| | then be labeled the primary line. This choice led to very different |
| | communication strategies with the public. If you communicate this line |
| | communication strategies with the public. If you communicate this line |
| | as a contingency of a ran back plan then you are imprying there is a |
| | primary pran between the fife and the contingency line. There are |
| | numerous possible downstream impacts to this. Within the scope of our |
| | tasking, the primary concern was this could lead to additional exposure |
| | when alternate lines closer to the fire are considered. It is understandable |
| | changes in fuels and weather could prompt a change in the primary |
| | course of action. However, this change should be deliberate and not |
| | predicated on the fact that equipment and personnel are available to do |
| | the work. It is recognized our environment contains a high degree of |
| | uncertainty and the benchmark by which the appropriateness of a line is |
| | measured should not be its success. Instead, the probability of holding |
| | the line should be weighed against the exposure. The effort should not |
| | be considered if you do not believe it will be effective. Especially if the |
| | primary reason for engaging in the effort is to demonstrate to the public |
| | that we are doing "all we can" or because the resources are available to |
| | do the work |
| Recommendations: | Consider the alternative courses of actions available to you within the |
| Recommendations. | constraints of the incident. The plan most likely to meet the desired |
| | endstate for the incident is the primary course of action. If this plan is |
| | unsuccessful you would respond with the alternate plan. If this plan is |
| | unsuccessful, you would respond with the alternate plan. If this plan is |
| | amargant plan. This aligns with the ariging of the DACE model. There |
| | emergent plan. This anglis with the origins of the PACE model. There |
| | should be no expectation that a PACE model begins with the control |
| | features or strategy most proximal to the threat and radiuses out like the |
| | rings on a bullseye. Also, the PACE model and course of action the |
| | PACE model is used to implement should be a part of the process |
| | outlined in Conclusion 1. If the primary plan changes due to changes in |
| | the critical variables, then the PACE model changes. One of the keys to |
| | adapting to the environment is not anchoring into a primary plan |
| | regardless of conditions. Avoid political maneuvers masked as strategic |
| | planning. |

| 7 – Maintain a Plar | ning Horizon that Allows IMT to Anticipate Changes |
|---------------------|--|
| Best Practice: | Ensured the IMT planning horizon was far enough out that they were |
| | prepared to anticipate and react to changes in the fire environment |
| | effectively. |
| Discussion: | During our review of the different leader's intent documents, WFDSS |
| | decisions, and our face to face meetings, the subject of long term |
| | planning or a team's long-term plan came up often. It was noted IMTs |
| | and AAs did not share a common understanding of what the term "long |
| | term plan" meant. In some cases, a long-term plan and long-term |
| | planning was a natural extension of the process the team employed. |
| | Some teams dedicated an operations chief to focus on strategic planning, |
| | which was commonly considered to be 3-14 days out. In these instances, |
| | the operations chief at ICP (AKA planning ops) focused on 1-3 days out |
| | and the field ops focused on the current day's events. In these examples, |
| | and with the Wildland Fire Management Team we visited there was a |
| | deliberate effort to ensure actions in the near, mid, and long term were |
| | closely coupled. This manifested itself during their explanation of their |
| | long-term strategy. They could articulate where fire growth was |
| | expected, the uncertainty that existed within their long-term plan and the |
| | probability of rare, and possibly severe events that could impact the |
| | incidents, the IMT was less able to conduct this sort of strategie |
| | assessment. The inshifts to get LTANs and SOD strategic |
| | assessment. The mathematic of the reasons IMTs had given for their lock of a robust long |
| | term plan |
| Recommendations: | Define the scope of the long-term plan AAs expect from IMTs. One |
| Recommendations. | conceivable way to do this is ask that IMTs have a long-term plan for |
| | protecting VARs that have a 60% or greater likelihood of being |
| | threatened in the most recent 14-day ES Pro model run and that this run |
| | be repeated every three days Regardless of the conditions used to |
| | define the long-term plan there needs to be a commonly understood and |
| | realistic expectation and the skillset necessary to support this |
| | expectation. It should also be noted that the required SOPL course has |
| | only been offered once in the last two years, so the available training |
| | must be increased if we are going to increase our capacity in this area. In |
| | the end, this may not really be a long-term plan and perhaps a naming |
| | convention should be established to define the criteria for a near-term |
| | plan (1-3 days approx.), mid-term plan (4-10 days approx.), and long- |
| | term plan $(11 + \text{days approx.})$. There is another key benefit of engaging |
| | in this type of planning. By ensuring we have a planning horizon far |
| | enough out, we can be better positioned to take advantage of changes in |
| | the environment. If we do not remain strategic, we are less likely to |
| | successfully adapt to these changes in conditions. Education and |
| | constant communication are essential to effective planning. |

| 8 – Purposefully Ta | ake Steps to Build an Inclusive Incident Team |
|---------------------|--|
| Best Practice: | IMT took deliberate actions to engage resources assigned to the incident, |
| | stakeholders, the public, and the Agency Administrators and identified |
| | this entire group as the team. |
| Discussion: | While it is believed all the IMTs and the AAs we interacted with |
| | understood the development of effective interpersonal relationships was |
| | necessary for creating a shared understanding of the objectives to be |
| | accomplished and the hazards faced, there were examples of teams that |
| | went beyond the normal passive process and took an active role in |
| | creating a team environment. In other words, these IMTs did not just |
| | expect that the entire incident function as a cohesive team, they actively |
| | worked to ensure their process promoted the formation of this team and |
| | they addressed any of the weak signals that may have suggested there |
| | was a lack of alignment between the different groups. |
| Recommendations: | Incorporate into team doctrine and process mechanisms that help develop |
| | a sense of team for the incident. Recognize the potential problems that |
| | can be created when individual groups identify to a greater degree with |
| | the smaller group than they do the larger effort. Take deliberate steps to |
| | ensure all members of the incident team feel valued. This may sound |
| | like a call for unnecessary niceties, but these simple steps taken when |
| | there is ample discretionary time can lead to more effective |
| | communication. When discretionary time is limited, and cohesion |
| | improves communication, there is really no excuse to not foster this |
| | sense of team. |
| | |

| 9 – Understand the | Tradeoffs Between Strategies |
|--------------------|---|
| Best Practice: | IMT ensured the risks associated with indirect strategies was clearly |
| | understood and perhaps most importantly, they recognized the tradeoff |
| | that occurs when firefighters are operating well away from the actual |
| | fire. |
| Discussion: | There was considerable discussion about the pros and cons of direct |
| | versus indirect line construction and it was interesting how different the |
| | level of detail used to explain these tradeoffs were. There were basically |
| | three different mindsets we encountered. First, there was the mindset |
| | that by constructing indirect fireline away from the fire, the hazards were |
| | reduced and it was easier to mitigate the remaining hazards to an |
| | acceptable degree. Second, there was the notion that although the hazard |
| | of the actual fire was no longer immediate, it would likely become a |
| | hazard that needed to be mitigated when they burned the line. It was also |
| | noted the larger the box the longer people are exposed. Also, since the |
| | threat is less tangible complacency is more likely. The third general |
| | category was those that viewed the immediate hazard of direct line |
| | construction to suppress a fire while it was smaller as only part of the |
| | risk we were assuming when we adopted this course of action. When |

| | forest health conditions were poor the total amount of the exposure this course of action was taking should not be viewed as just the exposure we |
|------------------|--|
| | face this year. It should instead be viewed as a culmination of the exposures we would face in what would have been a larger fire footprint. |
| Recommendations: | When considering the trade-offs between different strategies and the risk relative to each IMTs and AAs, must ensure they are considering the short and long-term impacts of their decisions. If you engage in miles of indirect line, how are you ensuring the resources are as engaged as they would be if they were operating on the fires edge? If you choose to take on higher risk for shorter duration in a given strategy, are you considering the way this may impact exposure in future years? There is not one right answer, but oversimplifying the tradeoffs should be avoided. |

| 10 – Ensure Resources Understand Overall Strategy | |
|---|---|
| Best Practice: | IMT communicated the overall strategy and how the actions expected of |
| | the resources on the ground tied back into this overall strategy. |
| Discussion: | Many IMTs were engaged in intent based planning and for some of these |
| | this was the first season they had been engaged in the process. So, it was |
| | understandable there were varying levels of proficiency with this task. |
| | However, teams that were engaged in the process, even for the first time, |
| | had a distinct advantage over IMTs that had not engaged. They were |
| | better able to articulate how the overall strategy tied into the actions on |
| | the ground. |
| Recommendations: | Expect the implementation of the intent based planning process in its |
| | most basic form on all incidents. Developing a course of action and the |
| | supporting task/purpose/endstate requires one to articulate their strategy. |
| | This in turn helps reduce the likelihood that fragmented efforts will be |
| | undertaken when these efforts do not tie into the overall strategy. This |
| | reduction is a practical reduction of risk. |

| 11 – Develop MAF | Ps Relevant to Actions on the Ground |
|------------------|--|
| Best Practice: | IMT developed, implemented and effectively communicated realistic and |
| | relevant MAPs that tied directly into the actions taking place on the |
| | ground. |
| Discussion: | The use of MAPs on the incident and in WFDSS varied broadly. |
| | However, the IMTs that were most effective in using the MAPs to |
| | communicate risk followed a similar process. First, the MAPs were |
| | developed on the incident and in collaboration with operations. Second, |
| | the MAPs were practical and stayed focused on decision points that |
| | would prompt communication outside the operations section or actions |
| | affecting other functions or stakeholders. Third, they aligned with the |
| | objectives set forth in the IAP and communicated to the IMT from the |
| | AA in their delegation or letter of intent. Fourth, there was a deliberate |

| | attempt to ensure the MAPs relative to a section of the incident was communicated to the resources in the field. By developing MAPs in this manner, they not only had value for the IMT, they also increased the confidence of the AAs that the overall strategy aligned with their expectations. This confidence contributed to the development of mutual trust and a shared understanding between the IMT and the AAs. This mutual trust and shared understanding would also extend to the stakeholders and the public in some situations, such as with MAPs related to pre-evacuation warnings and evacuation orders. |
|------------------|---|
| Recommendations: | Incorporate the development of MAPs into the strategic planning process in a manner that ensures they are realistic and align with the delegation and letter of intent. Disseminate this information in a manner that better allows for these MAPs to aid in decisions on the ground. This can include referencing specific MAPs in the 204s for divisions that will have a role in, or are impacted by the actions set forth in a MAP. Ensure that the MAPs shared with the field in this matter are relevant and avoid overwhelming resources with so many MAPs that the ones they should be concerned with are easily identifiable. Ensure the MAPs, course of action, task/purpose/endstate, and actions taken all align and can be met. When AAs build relationships with community stakeholders prior to a large fire event they are better able to engage effectively in accurate dialogue about MAP development during an event because stakeholders who may have differing land management objectives are more able to properly attribute the reason for a given action. |
| | |

| 12 – When Local K | Knowledge Can Contribute to Flawed Assumptions |
|-------------------|--|
| Best Practice: | IMT recognized when operating above the 97th percentile, in a year |
| | where fire season began a month earlier than normal, many of our past |
| | experiences could not be directly applied to the current environment. |
| Discussion: | It had been discussed on multiple incidents that local knowledge and |
| | historic fire conditions are important to consider when developing a |
| | course of action for the current incident. However, there are some |
| | limitations to the application of this information that must be realized. |
| | This information must be put into context. For example, if a large fire |
| | burned in a particular area under similar conditions, it may be easy to |
| | anchor into expectations that the current fire will behave in a similar |
| | manner even if the fuel type is considerably different from the fuels |
| | during the previous event. Perhaps the earlier incident had a significant |
| | timber component and now the area is predominately brush. Another |
| | consideration should be the indices and time of year. If very few fires in |
| | the past twenty years have burned under similar conditions and most of |
| | the large fires started a month later than the current incident, there may |
| | be more differences than similarities. These must be considered when |
| | formulating a strategy. |

| Recommendations: | Ensure the past fire history is placed in the proper context when |
|------------------|---|
| | developing strategies for the current incident. Assess the similarities and |
| | the differences equally. Avoid assumptions that can lead to over or |
| | underestimating the probability of success of the different strategies |
| | being considered. |

| 13 – Collaborate with AAs & Avoid Ambiguity | |
|---|---|
| Best Practice: | IMT clearly and candidly discussed their planned actions and areas of |
| | concern with agency administrators and avoided ambiguity even when it |
| | meant they would be admitting their own shortcomings. |
| Discussion: | Those IMTs that reported having frequent, candid discussions with the |
| | AAs attributed these conversations to the existence of mutual trust. By |
| | being transparent about their concerns and in their discussions about the |
| | trade-offs that existed between different courses of action, they avoided |
| | miscommunications and unrealistic expectations. |
| Recommendations: | Engage early and often with the AA and be willing to have candid |
| | conversations about strategy and the IMTs ability to meet objectives. |
| | Establish a prioritized list of values at risk early in the incident and |
| | manage expectations by honestly relating the IMTs capabilities in all of |
| | the areas that could impact their accomplishment of the mission. |
| | |
| | |

| 14 – Incorporate Predictive Tools into Planning Cycle | |
|---|---|
| Best Practice: | IMT Utilized LTAN/FBAN/IMT and SOPL (AKA science team) to help |
| | inform their long-term strategy and these teams integrated these efforts |
| | into the planning process. |
| Discussion: | Some of the IMTs would include the information developed by the |
| | science team as part of their planning meeting and this helped to ensure |
| | the modeling was shared. The IMTs who were most effective in |
| | applying these tools to their planned actions would meet with the science |
| | team prior to the planning meeting so they could incorporate their |
| | predictive models into the development of the next day's plan. In one |
| | case the LTAN would identify on the map areas where resistance to |
| | suppression may be higher than on previous days or where changes in the |
| | weather or fuels may present opportunities. One team found significant |
| | benefit in developing a culture where constant engagement with the |
| | science team and DIVS was common. They would even have the DIVS |
| | FaceTime the fuels in an area of concern so they could ensure the model |
| | was representative of conditions on the ground. |
| Recommendations: | Leverage the predictive analysis available to the IMT through team |
| | members and remote support. Incorporate this information into the |
| | planning cycle where it can provide the greatest benefit. Support IMT |
| | members in developing the necessary qualifications (LTAN, SOPL) so |
| | that the IMT is not dependent on remote support. |

| 15 – Effective Safety Officer Briefings | |
|---|--|
| Best Practice: | During the morning briefings, the safety officer chose a topic and a relevant case study to brief to or they delivered a message that helped provide tools to the audience designed to increase the effectiveness of their individual risk management. |
| Discussion: | The traditional safety officer briefing would include a discussion of a short list of items deemed relevant. This would normally include items such as driving, dehydration, snags, PPE, handwashing, etc. There was broad consensus this type of briefing was not as effective at prompting the desired actions as the two alternatives listed below. Alternative 1, explain a part of the risk management process and how its application in the field could help resources to better consider how certain actions would either increase or reduce their exposure. Alternative 2, select one topic relevant to a hazard on the incident and a case study to discuss during the morning briefing. By contextualizing the information in this manner, it was viewed as more applicable to the resources in the field. Also, the inclusion of a case study made it much more likely the mitigation discussed would be applied in the field. |
| Recommendations: | Make the goal of a safety briefing the practical elimination of accident sequences that could lead to a serious injury or fatality and conduct briefings geared towards meeting this goal. |
| | |

| 16 – Use Collector to Improve Situational Awareness | |
|---|--|
| Best Practice: | IMT leveraged existing technology in a manner that allowed them to |
| | have more accurate and timely mapping products. |
| Discussion: | There were a number of IMTs that had leveraged the capabilities of |
| | products such as collector to help better maintain the situational |
| | awareness of everyone on the incident. The teams that have embraced |
| / | this technology have done so with great success. The use of these |
| | applications has also allowed these teams to more effectively maintain a |
| | common operating picture, even in a rapidly changing environment. |
| Recommendations: | Develop the necessary skills within the IMT to incorporate Collector and |
| | other technology into their operations. |

| 17 – Ensure Medical Response is "Ready to Engage" | |
|---|---|
| Best Practice: | IMT incorporated a process when taking an incident that ensured they |
| | had met certain criteria regarding their ability to provide essential |
| | capacity in communication, medical and other critical areas. |
| Discussion: | One of the IMTs developed an "Are We Ready to Engage?" Checklist |
| | that included numerous tasks which began with the In-briefing and |
| | continued through the third shift. This deliberate process was an |
| | excellent approach for each IMT to adopt so they could ensure they had |
| | the items needed to attend to a significant injury on the line are ready. |
| | Another process a team employed that was viewed as a best practice was |

| | the implementation of an IWI drill before noon on day one. At morning |
|------------------|--|
| | briefing a Division was advised that sometime in the morning he would |
| | have to respond to a mock medical incident on his/her division. At some |
| | time before 1200 the Safety Officer would approach a member and |
| | advise them they were to run the IWI and provide this person with the |
| | information on the injured party. They would run the drill from the |
| | actual location and then conduct an AAR. |
| Recommendations: | Ensure IMT has a process in place that emphasizes the need to be able to |
| | care for a significant injury immediately after taking the incident. Ensure |
| | realistic training is incorporated into the process early in the incident to |
| | validate that the IMT is ready to deal with a life-threatening injury on the |
| | line. |

| 18 – AAs Briefing | to VARs is Beneficial |
|-------------------|---|
| Best Practice: | During operations briefing, AAs briefed to the values at risk and why |
| | they were important and what values held the highest priority and why. |
| Discussion: | During our discussions with IMTs we asked what information AAs had |
| | delivered at briefing that was most valuable. It was broadly recognized |
| | when the AA focuses on how the actions of the IMT and the resources |
| | assigned are helping to protect a value and a short explanation of why |
| | that value is important was given, those briefings were seen as most |
| | meaningful. |
| Recommendations: | Encourage AAs to use their time at Operations Briefings to discuss what |
| | values were the highest priority and why they were important. |
| | |
| 19 – Recognize So | cial and Political Risks and the Potential for Bias |

| 19 – Recognize So | cial and Political Risks and the Potential for Bias |
|-------------------|--|
| Best Practice: | IMT and AA engaged in candid discussions about the social and political |
| | risks being faced and how these risks could bias their actions. By |
| | declaring this potential, they were better prepared to minimize the |
| | impacts these influences could have on effective risk management. |
| Discussion: | While risk to life is easy to articulate some of the other types of risk are |
| | less tangible, even though the potential consequence can be significant. |
| | When discussing with the IMTs and the AAs about how a lack of |
| | alignment can lead to issues during or after the incident, the issue of |
| | social and political risk was often discussed. In these discussions, this |
| | lack of alignment manifested itself in two ways. First, it was sometimes |
| | seen as a competing value. That is, by recognizing the political risk you |
| | were reducing the priority placed on avoiding one of the other types of |
| | risk. This has led to confusion among IMTs on the actual priorities of |
| | the AA. The second way this ambiguity manifested itself occurred at |
| | almost the same spot on every incident where it was discussed. When a |

| | fire escaped initial attack and either the probability of success or the risk |
|------------------|---|
| | to firefighters warranted indirect line construction, there seemed to be |
| | consensus on the course of action. However, as the incident progressed |
| | and political and social pressures increased, there was a desire to reassess |
| | the course of action that had been committed to. At times, this |
| | reassessment was viewed as a desire for the IMT to change their course |
| | of action. The incidents where these events took place and the disruption |
| | or confusion they caused was minimal, they attributed this to their ability |
| | to have candid conversations where they could explain the perception |
| | and ask clarifying questions that ensured they maintained a common |
| | operating picture of incident priorities and support for the planned course |
| | of action. |
| Recommendations: | Be aware of the other influences that can impact the decision makers and |
| | the realization that a situation is likely to occur, like a long duration |
| | incident, does not mean it will be immediately accepted or even that the |
| | influence of external factors will be immediately recognized. Discuss |
| | the influences that could be affecting decisions and be willing to reassess |
| | a course of action or provide more detail to ensure support for the |
| | planned course of action is maintained. |

| 20 - Adhere to the | Standardize ICS-206WF |
|--------------------|---|
| Best Practice: | IMT ensured consistent application of the ICS-206WF |
| Discussion: | There were a number of IMTs who had modified the existing ICS- |
| | 206WF. These modifications were primarily done to minimize the |
| | amount of space the document took up in the IAP. On some of these |
| | modified forms, the division specific information was removed |
| | completely. While individual team may desire to modify the form from |
| | the original format, they should consider many of the resources we |
| | assign to the most dangerous work on the incident have trained on the |
| | form and we limit the effectiveness of this training when we fail to |
| | maintain a standardized form. It is understood this places an additional |
| | workload on the Medical Units, however the additional work they |
| | complete when discretionary time is available better sets up resources in |
| | the field to effectively manage an incident when they do not have |
| | discretionary time. |
| Recommendations: | Include the standardized ICS-206WF in the IAP. Submit suggested |
| | modifications to the Incident EMS Working Group at NWCG so the |
| | form can be improved in a uniform fashion. |

| 21 – ICS-209 Format Inhibits Accurate Communication | |
|---|--|
| Best Practice: | Change ICS-209 to allow for better consistency in reporting strategy and |
| | completion or containment. |
| Discussion: | During multiple conversations, the issue of the ICS-209 was raised. The |
| | primary shortcoming identified was the lack of a clear process to report |

| Recommendations: | progress when engaged in a full suppression strategy that included the implementation of indirect containment lines. In some cases, the IMT had shown 0% containment for multiple operational periods while they worked to complete their indirect containment lines. It was the common view that until a section of indirect line was constructed, burned and held, it could not be considered contained. This resulted in questions from those reviewing the 209s, since the form did not clearly articulate the efforts that were being undertaken or their progress towards completing these efforts. Further, some teams took the view this type of activity should be reported under a confine strategy, which allowed for the IMT to define the percent of the total completion objectives each action represented. However, the ICS 209 User Guide notes full suppression "Implies a strategy to put the fire out" and to "complete a fireline around the fire to halt fire spread and cool down all hotspots that are an immediate threat to control line". The confine strategy states it is intended to "restrict a wildfire to". So, the current form forces the IMT constructing indirect fireline around the entire perimeter of the fire to remain at 0% containment under the full suppression strategy until the line is burned and held or they report under the containment strategy which provides a mechanism to report the percent of this indirect line completed, but does not imply the same full perimeter containment intent. This leads to confusion in reporting and can negatively impact effective resource allocation and incident prioritization. |
|------------------|--|
| Recommendations: | Conduct a gap analysis on the current form and its application to ensure the intent is being met. In our view, it would be best to define the users of the document and what information they require. Then, work with IMTs to create a 209 form that provides the needed information in a manner more user friendly and effective. This would eliminate the |
| | current issue and improve communication. |

| 22 – ICS-204 in iSt | uites Should Allow Space for Task/Purpose/Endstate |
|---------------------|--|
| Best Practice: | ICS-204 forms in iSuites would allow for Task/Purpose/Endstate and |
| | other information to be included |
| Discussion: | The current and ongoing effort to generate a common operating picture |
| | and engage in intent based planning is hindered by the inability to adjust |
| | the 204s in iSuites to include the required information. The impact for |
| | IMTs is they must move this information onto an editable form. This |
| | creates an added workload and creates additional opportunity for error. |
| | These errors have led to incorrect radio frequencies on the 204s, |
| | resources not properly shown on the 204s, and errors in their last work |
| | day. |
| Recommendations: | Modify the form in iSuites to allow for Task/Purpose/Endstate to be |
| | included. |

| 23 – Instructions or | n ICS-206WF need to be Improved |
|----------------------|---|
| Best Practice: | Improve instructions to ensure consistent application of the ICS-206WF |
| Discussion: | While some IMTs had chosen to modify the ICS-206WF based on their |
| | own views on what information was important, the majority |
| | demonstrated a desire to complete the form in a manner consistent with |
| | national direction. However, the ambiguity of the form and the |
| | instructions did not always allow for this to happen. Different MEDLs |
| | would interpret the different blocks in different ways. Here are some of |
| | the items discussed: |
| | The ICS 206 WF Form should be editable for the number of divisions |
| | and hospital and the amount of space required for each DIVS should be |
| | reduced significantly so it does not create such a large document. |
| | The instructions should ensure standardized approach to identifying the |
| | hospitals is followed. There was general agreement the hospitals listed |
| | should include the following |
| | Closest hospital, any type |
| | Closest Level 1 or 2 Trauma Center |
| | Closest Burn Center |
| | I here is no information in the instructions to ensure the helipad for the |
| | nospital can receive incident aircraft or certain types of aircraft. If you |
| | used a type 1 for a noist extraction would it be able to land at the |
| | nospilal? The Air and Crownd Troyal Time instructions should state that the time |
| | should be "ETA to fireline". This can very significantly and this |
| | should be ETA to meme . This can vary significantly and this |
| | There is considerable variation in how the information associated with |
| | block 6 is filled out. Each of the IMTs had rationale behind their |
| | approach but without guidance their approaches varied significantly |
| | EMS Responders & Canability – The instructions on this section are |
| | clear, but there is not enough room in the space provided to list the |
| | required information. Three lines would be the minimum that should be |
| | provided. |
| | Equipment Available on Scene – If you have an ALS provider, do you |
| | list ALS gear? Or, should this be reserved for specialized transport |
| | equipment such as a stokes basket or litter wheel? Or should it be |
| | omitted? |
| | Medical Emergency Channel – Most Teams list the command, tactical |
| | for the division they are on and the A/G. In the instructions, it just says |
| | Channel 6, Command. It is not clear if the channel 6 is a TAC or another |
| | reference to the command frequency. What is the intent? Also, when |
| | the appropriate command frequency changes when you are at a different |
| | location, should that be listed. Also, sometimes there is a different med- |
| | evac frequency. Some teams put "see comm plan" |
| | ETA for Ambulance to Scene – this prompted considerable conversation |
| | and there are no instructions. If ambulances are assigned to the incident |
| | is there a spot where the ETA times should be listed from? If that is the |

| | case, then there is no room. Most of the teams simply added "varies" to this section. It also differs significantly based on the location within the division. |
|------------------|--|
| Recommendations: | Modify the instructions on the ICS-206WF to aid in greater consistency between IMTs |

| 24 – Instructions on ICS-206WF need to be Improved | |
|--|---|
| Best Practice: | Improve instructions to ensure consistent application of the ICS-206WF |
| Discussion: | While some IMTs had chosen to modify the ICS-206WF based on their |
| | demonstrated a desire to complete the form in a manner consistent with |
| | notional direction. However, the ambiguity of the form and the |
| | instructions did not always allow for this to happen. Different MEDLs |
| | would interpret the different blocks in different ways. Here are some of |
| | the items discussed: |
| | The ICS 206 WF Form should be editable for the number of divisions |
| | and hospital and the amount of space required for each DIVS should be |
| | reduced significantly so it does not create such a large document. |
| | The instructions should ensure standardized approach to identifying the |
| | hospitals is followed. There was general agreement the hospitals listed |
| | should include the following |
| | Closest hospital, any type |
| | Closest Level 1 or 2 Trauma Center |
| | Closest Burn Center |
| | There is no information in the instructions to ensure the helipad for the |
| | hospital can receive incident aircraft or certain types of aircraft. If you |
| | used a type 1 for a hoist extraction would it be able to land at the |
| | The Air and Ground Travel Time instructions should state that the time |
| 1 | should be " ETA to fireline". This can vary significantly and this |
| | information can impact transport decisions |
| | There is considerable variation in how the information associated with |
| | block 6 is filled out. Each of the IMTs had rationale behind their |
| | approach, but without guidance their approaches varied significantly. |
| | EMS Responders & Capability – The instructions on this section are |
| | clear, but there is not enough room in the space provided to list the |
| | required information. Three lines would be the minimum that should be |
| | provided. |
| | Equipment Available on Scene – If you have an ALS provider, do you |
| | list ALS gear? Or, should this be reserved for specialized transport |
| | equipment such as a stokes basket or litter wheel? Or should it be |
| | omitted? |
| | Medical Emergency Channel – Most Teams list the command, tactical |
| | for the division they are on and the A/G. In the instructions, it just says C because f and f is not also if f is a first size of f is the set of |
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| | reference to the command frequency. What is the intent? Also, when |
|------------------|--|
| | the appropriate command frequency changes when you are at a different |
| | location, should that be listed. Also, sometimes there is a different med- |
| | evac frequency. Some teams put "see comm plan" |
| | ETA for Ambulance to Scene – this prompted considerable conversation |
| | and there are no instructions. If ambulances are assigned to the incident |
| | is there a spot where the ETA times should be listed from? If that is the |
| | case, then there is no room. Most of the teams simply added "varies" to |
| | this section. It also differs significantly based on the location within the |
| | division. |
| Recommendations: | Modify the instructions on the ICS-206WF to aid in greater consistency |
| | between IMTs |

Limitations

Due to the nature of the environment in which we were conducting our engagements, there were distractions and other higher priorities competing for the time of the personnel we identified as participants. While this prevented us from engaging with every function listed on every incident, it was our view the value of collecting this information during the event was much more of a benefit than the negative impacts generated by these circumstances.

There are also broader limitations to the overall discussion of risk and risk communication. These are based in the lack of a common language to discuss risk and the terms associated with it. During our engagements, the use of terms such as risk, hazard, mitigation, acceptable risk, residual risk, uncertainty, and probability varied broadly and terms that have different meanings were often interchanged. This problem is not unique to the Regions 1 and 3 or even to the wildland fire community. However, this lack of a common language does present potential problems as we continue to look for ways to improve our risk management practices.

Discussion and Implications

Much of the information contained within the outcomes we defined as best practice have implications on risk communication because they help us to manage an incident more proactively. They also help consider the uncertainty associated with the incident in a way which informs decision making. This aids IMTs and AAs in improving their ability to successfully meet the objectives of the incident. They do this by creating a system that better allows for us to minimize the downstream exposure while better enabling us to realize the potential benefits of an unpredictable, but beneficial, change in our environment.

Although objectively measuring the risks we face and the uncertainties we may encounter may be preferred, this can lead to us ignoring or understating the potential consequences of strategic uncertainties. Uncertainty will always be an integral part of the environment in which we operate. However, we must continue to improve our processes to reduce uncertainty to the extent possible. We should also emphasize the importance of adopting procedures and practices that improve the quality of the decisions we make while helping reduce the frequency and severity of the consequences.

Other Items to Consider

The bullet points below are items that may not be directly applicable to the tasking but we viewed as beneficial to the audience.

- The following fundamental principles should apply to the overall objectives of Risk Guidelines:
 - Life safety is paramount.
 - Risk should inform the decision process. Decisions are not 'risk-based'.
 - Identify and reduce the risk to life and property posed by a course of action and reduce those risks to as low as reasonably practicable (ALARP), not zero.
 - The urgency of completing safety actions should be commensurate with the level of risk.
 - Risk communication must be well planned, timely, and involve all parties potentially affected by the decision.
- Establishing a common set of core values between the IMT and AA can help ensure alignment throughout the incident. One AA described his core values for the incident as Life/Relationships/Communities.
- The primary effort should have a high probability of success and be the foundation for the overall strategy.
- Be descriptive in explaining your strategy. Avoid relying on terms like "big box" to define your course of action.
- IMTs who took advantage of down time while prepositioned reported it helped them be effective more quickly when they were assigned to an incident. One team trained on IWI and identified local capacity for EMS response.
- The Communication unit on many incidents tracked medical providers and safety officers on the incident so they were always aware of the closest resource.
- When considering the impact of different courses of action, do not forget to include smoke management. Smoke modeling and incident RAWS can be used to better assess population center impacts.
- Multiple teams employed standardized operations guides to ensure everyone had a clear understanding of team process.
- One IMT conducted a "3-day look" each morning. During this meeting, they discussed planned actions and potential impacts for the next 3 operational periods. It took about 15 minutes and the information was shared daily at C&G.
- One IMT put together a card with the medical incident report on it for each member in the event they did not have their IAP and the writing on the IRPG was too small for some.
- Alternatives to conventional mop up standards to include utilizing sprinklers was an alternative one IMT was considering reducing exposure.
- When asked what items AAs have identified which indicating to them there may be a need for greater engagement the following were provided:
 - Actions in IAP do not seem to align with their understanding of the planned course of action.
 - Incident objective(s) differ significantly from the information in the delegation.

- They hear the same planned actions with no associated endstate or reported progress (AKA Ground Hog Day) day after day.
- Information relayed to resources in division breakouts is inconsistent with expected actions.
- The IC states there is a clear understanding of the AAs expectations while section chiefs and others are asking multiple questions about the same thing.
- Remember the AAs are spending a lot of time with personnel outside of fire asking them questions. As an IMT expect to receive questions related to their concerns.

Questions for Consideration

These questions came up during our discussions and while a specific best practice may not have been identified we felt the intended audience would befit from their inclusion.

- If the fire weather forecast underpredicted fire behavior on day one, and over predicted fire behavior on day two, how do we approach the forecast and its relevance to the type of tactics we will use on day three? If the weather forecast overpredicted fire growth on day one and underpredicted it on day two would that change our perception on day three?
- How do we react to the lag that occurs when resource demand on our incident or others dictates a longer delay in getting orders filled? How do we know? Is it strictly based on intuition? Is there a better way?
- Is there a best practice, process for zoning a fire and splitting up the assigned resources? Who sets the expectations? Where is this taught if there is a standard?
- What is the impact on operational effectiveness of "potentially" having to zone a fire? What are the conditions that lead to the decision? How are they discussed, weighed?
- How do we track resources on Non-operational assignments such as the support of aviation water operations and logistical uses? How do we ensure resources ordered for a non-operational role are properly allocated when they arrive?
- How is the decision to establish a spike camp informed by risk? We talk about the logistical ability to support, but do we start with first considering the positive or negative impact on the risk we are assuming or is the decision strictly driven by our ability to support it?
- How do we communicate/consider the risk associated with choices related to structure protection? Do we fail to consider the risk the same way we do with other tasks because of the priority we place on structure protection? Would we approach line construction to stop the spread of the fire the same way we approach the decision to engage in structure protection actions?
- Alternate approach to mapping hazards and communicating risk to AAs:
 - First, identify the VARs and color code them (BLUE). This would not be a point, but instead a polygon that shades the VAR.
 - Next, establish a mapping convention for the terrain, road access, fuel types, etc. between the edge of the fire and the values. When more than one hazard exists on a certain area, the color code would change Green equals favorable, yellow equals one hazard, red equals two and orange equals three or more.
 - All this information is projected onto a map and the areas for line construction would be illustrated by the green, or perhaps yellow. There will likely be critical

pieces of the fire where we have to engage on red or orange. This would mean more mitigations to reduce the length of exposure, increase the ability of the resources you place in that area or provide additional resources to reduce the severity of the consequence (medic teams, REM, dedicate a shorthaul ship, or ambulance).

- Then, when your brief the AAs on the risks being taken, they would have a clearer understanding of the areas of higher risk and would be able to more deliberately engage in conversations about what is acceptable.
- Does the way we define success in our task/purpose/endstate or objectives bias our actions? If we state we are going to hold a road or a ridge to protect a community, do we accept a greater degree of risk simply because of the perceived value of the object being protected? Are we as willing to point protect and pick a control feature beyond the VARs as we would be if we did not have the values on the landscape?
- FBAN/IMET Given the weight we place upon their predictions and how they impact our strategy and tactics, what can we do to become better informed on the accuracy of a given IMET or forecaster in a given environment or fuel type. Without this, we either choose to believe or to not believe their predictions. If you ignore a forecast and go with a riskier option based on this, you will certainly be accountable for the outcome. If you react to a forecast in a way that reduces the risk to firefighters, even if it means critical objectives go unmet and the forecast is incorrect, then you can transfer the responsibility. So, the overall impact is to reward actions that are biased towards the less effective use of firefighters. After all, we tell people to base our actions on current and predicted fire activity, even when the predicted has never been calibrated.
- Why is briefing at 0600 and why do IAP parts need to be in at 2130? If we allowed the IMET until 0300 for example would the forecast accuracy increase?
- What if the forecast had key information that would be more accurate at 0600 omitted and resources wrote it in? What if the forecast also had a QR code and the updated information could be accessed?

Proposed Further Action

Throughout the engagements numerous individuals provided input into this document. Participants also identified several aspects of the current training and consistent application of processes throughout the IMTs. These deficiencies diminish the potential contribution of IMTs to risk reduction. Aspects identified as needing improvement include the following:

- **Ongoing Training** While S-520 and other courses have adapted to include intent based planning and individual IMTs have shown initiative in many areas that aid in risk reduction there is no ongoing training requirement to better ensure there is broad dissemination to bridge the gaps in knowledge that exist between IMTs. This ongoing training effort should identify benchmarks for prioritizing and achieving these training objectives and performance measurements tied based on these objectives.
- Identification of a Medical Standard of Cover for Wildland Fire The level of service an IMT viewed as adequate was based largely on the experience of their medical unit leaders at their home unit. MEDLs who worked in a rural environment where Basic Life Support and long transport times were the norm often applied this standard to the

incident as the minimum acceptable level of medical coverage. Whereas, MEDLs that operated in a system that had more capacity often had a much higher expectation that often included more ALS providers and alternative means of extraction which included Rapid Extraction Modules and Dedicated short-haul helicopters. Developing a standard of cover that would determine the preferred level of service would provide significant benefit.

• Continue to improve our collective understanding of risk management – Risk management includes evaluating the environmental, social, cultural, ethical, political, and legal considerations during all parts of the process to assure due diligence in the management of risks. All the activities related to the effective management of risks which involves firefighter, public, and aviator safety actions to reduce risk and activities to identify issues early before potential failure modes can initiate should be included.

Closing Comments

Risk communication is a critical component of an effective risk-informed decision process. It is not a separate component of the process; it must be integrated into all aspects of the process in a manner that considers the uncertainty of our environment. Risk communication provides many benefits, including enhancing communication with the public and internally within agency administrators and IMTs. An effective process improves the chances that incident safety decisions will be supported within and outside of the organization. We hope the information included in this document can be used to help all of us more safely manage these incidents and we appreciate the opportunity to contribute.