

Submission Number: NND.001.01098

Submission Of: [REDACTED]

Your Details

Email address:

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Preferred means of contact: Phone

What is your submission based on? I am making this submission based on my professional knowledge, qualifications or experience or on behalf of a group or organisation

What is your area of professional expertise? Australian Defence Programs

If you are lodging your submission on behalf of a group or organisation, what is the name of the group or organisation? Northrop Grumman Australia Pty Ltd

Your Submission

In your experience, what areas of the bushfire emergency response worked well?

Please see attached

In your experience, what areas of the bushfire emergency response didn't work well?

Please see attached

In your experience, what needs to change to improve arrangements for preparation, mitigation, response and recovery coordination for national natural disaster arrangements in Australia?

Please see attached

Is there anything else you would like to tell the Royal Commission?

Please publish the submission (as agreed below) under Northrop Grumman Australia Pty Ltd rather than as an individual submission.

Do you agree to your submission being published? Yes I agree to my submission being published in my name

Supporting material provided:

NGA Bushfire Royal Commission Submission 28 April 2020.pdf



Northrop Grumman Australia Pty Limited
Unit 3, 2 Faulding Street
Symonston ACT 2609

28 April 2020

Air Chief Marshal Mark Binskin AC (Ret'd)
Commissioner
Royal Commission into National Natural Disaster Arrangements
Locked Bag 2000
Manuka, ACT, 2603

Dear Air Chief Marshal Binskin,

Northrop Grumman Australia, a wholly owned subsidiary of the Northrop Grumman Corporation, welcomes the opportunity to make a submission to the Royal Commission into National Natural Disaster Arrangements, and assist in advancing Australia's response to bushfires following the devastation from the recent, unprecedented bushfire season.

Northrop Grumman Australia is proud of our mature relationship with the Commonwealth of Australia and have been supporting a variety of defence and civil programs in Australia for more than 20 years.

Northrop Grumman has extensive experience in contributing to firefighting efforts, including assisting the California Department of Forestry and Fire Protection to fight wildfires in a timely, efficient and coordinated way through the implementation of a computer-aided dispatch and mapping system.

Northrop Grumman Australia's submission reflects an appreciation of the lessons learned from Australia's 2019-20 bushfire season. In particular, the value of establishing a coordinated, national approach to firefighting under a centralised command, control and communication structure to manage increasing fire activity.

We recommend that the Royal Commission to consider the recommendations contained within this submission and will welcome the opportunity to present at a public hearing to discuss our recommendations with the Commission in further detail.

Yours sincerely,

A solid black rectangular box used to redact the signature of the sender.

Chris Deeble AO, CSC
Chief Executive

Attachment:

1. Northrop Grumman Australia – Submission to the Royal Commission into National Disaster Arrangements



SUBMISSION

Royal Commission into National Natural
Disaster Arrangements

28 April 2020

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INQUIRY TERMS OF REFERENCE

The Royal Commission into National Natural Disaster Arrangements was established on 20 February 2020 in response to the extreme bushfire season of 2019-20, which resulted in loss of life, property and wildlife and environmental destruction. The Royal Commission will have a national focus and examine three key areas:

1. Coordination between federal, state, territory and local governments

- The Commission will assess how responsibilities in relation to natural disasters are delineated between Australia's various levels of government.
- This will include preparedness, responses, resilience and recovery from natural disasters, and a consideration of how resources are shared. The Commission will consider existing arrangements and what could be done to improve them.

2. Improving resilience, adapting to climate change, mitigating the impacts of natural disasters, and enhanced accountability. This element of the inquiry will consider:

- Arrangements to improve resilience and adapt to climate change;
- What actions should be taken to mitigate the impacts of natural disasters; and
- Whether accountability for natural disaster risk management, preparedness, resilience and recovery should be enhanced, including through a nationally consistent accountability and reporting framework and natural standards.

3. Whether legal reforms are needed to let the federal government respond to national emergencies

- The federal government has said the bushfires exposed a "constitutional grey zone" because the federal government lacks the power to declare a national emergency, which would have given it clear authority to take direct action in response to the fires.

INTRODUCTION

Northrop Grumman Australia welcomes the opportunity to make this submission to the Royal Commission into National Natural Disaster Arrangements.

Northrop Grumman Australia is a wholly owned subsidiary of the Northrop Grumman Corporation. Northrop Grumman solves the toughest problems in space, aeronautics, defence and cyberspace to meet the ever-evolving needs of our customers worldwide. Our 90,000 employees define possible every day using science, technology and engineering to create and deliver advanced systems, products and services.

Northrop Grumman is proud of our established relationship with the Commonwealth of Australia and is committed to enhancing our business and geographic footprint in Australia.

We have a strong customer base in Australia and have been supporting a variety of defence and civil programs in the country for more than 20 years. We work with the Australian government and the Australian Defence Force (ADF) to ensure border and Indo-Pacific region security mission success through a number of programs.

As a Prime System Integrator (PSI) with a global reach, we have deep experience as an integrator of large information systems that can support a number of operators, while achieving an overall objective, such as success on the battlefield.

Northrop Grumman also has extensive experience in contributing to firefighting efforts, including assisting the California Department of Forestry and Fire Protection to fight forest fires in a more timely, efficient and coordinated way through the implementation of a computer-aided dispatch and mapping system. Northrop Grumman's Global Hawk high-altitude remotely piloted aircraft has also been used to carry out vital surveillance of wildfires in California. While Australia is a leader in fire response in many ways, there are also lessons to be learned from jurisdictions such as California, which is investing significantly in the assets and systems needed to respond to an increasing fire threat.



Our significant experience in command, control and communication across a number of countries has given us a unique perspective on the value of acquiring and disseminating information in an easy-to-use format to the person on the ground, whether they be holding a firearm or a firehose.

Northrop Grumman Australia welcomes the opportunity to contribute towards this inquiry and to assist in improving Australia's response to future bushfires. In doing so, we are concentrating our response on the first two terms of reference: coordination between governments and improving resilience.

RECOMMENDATIONS

Northrop Grumman Australia recommends to the Royal Commission that the Australian government:

1. Establish a "system of systems" approach that shares information via a central agency to coordinate surveillance and firefighting efforts, learning lessons from the Australian Defence Force's approach to battle management. In essence, a single source of truth and common situational awareness.
2. Creating a national command and control capability that has an established common operating picture that can be easily shared in real time across stakeholders. This capability will ensure coordination of national assets and support to the states and territories.
3. Conduct an audit of each jurisdiction's firefighting, surveillance, information management and command and control capabilities to identify gaps and provide an overall common operating picture of capability to a central agency.
4. Consider all options for the most effective capability in surveillance and firefighting, including the use of unmanned aerial surveillance, to provide persistent and real-time surveillance.
5. Establish a national Concept of Operations (CONOPS), standardised procedures and a detailed appreciation of firefighting assets including common, minimum equipment lists. Collectively, this will ensure commonality, supportability and interoperability at the national, state and territory levels.
6. Given the destruction of mobile towers and the loss of power/battery life within eight hours, the need for persistent airborne communications or low-cost satellite nodes should be actively considered to provide a common and reliable communications solution that will enhance the timeliness of decisions in/to/from the fire-grounds.

THE 2019-20 BUSHFIRE SEASON — LESSONS LEARNED

Natural disasters do not know state borders. From all points of the compass Australia burned over the summer, yet the response to dealing with the fires remained parochial, with states and territories dealing with their emergencies using different reconnaissance and intelligence systems, as well as differing command, control and communication structures.

The 2019-20 season underscored the need for a **nationally coordinated approach**, but a state-based (distributed) execution to deal with bushfires. A national system that collects data on fire threats and the location of firefighting assets, would support the deployment of these assets in as close to real time as possible and underpin a truly national solution.

Northrop Grumman Australia recognises that states and territories will have their own cultural and operational reasons for arranging their fire responses in the way they see best. However, the establishment of a baseline level of capability for each jurisdiction, overlaid with a national command, control and communication system, would combine these disparate systems into a singular whole, with each part contributing based on the most pressing need.

In facing any challenge, **timely, reliable and accurate information is key**. For firefighting, this means surveillance of the fire-ground. Early detection can greatly assist the success of firefighting efforts as the longer a blaze is allowed to continue the more difficult it becomes to control. Constant vigilance of fire-grounds using dedicated aircraft (both manned and unmanned) with a baseline capability of

information-gathering across jurisdictions is integral. Further, the high reliance on ground-based mobile networks identified serious limitations in the coordination of firefighting efforts. Alternative solutions, such as airborne cellular network systems, are essential to provide reliable, real-time communications.

The **standardisation of procedures** within a nationally agreed CONOPS will derive a coordinated and well-managed approach to carry out surveillance and firefighting efforts.

THE 2019-20 BUSHFIRE SEASON — WAYS FORWARD

As noted, our approach to fighting fires should cross jurisdictions as easily as the blazes themselves. This will require a degree of cooperation from the states and territories, but there are precedents for this in cooperating on search and rescue and our response to coronavirus. It will also require a degree of overall command, control and communication.

A TRANS-BORDER APPROACH TO A TRANS-BORDER PROBLEM

Based on the experience of 2019-20, it is essential to develop a coherent capability based on trusted and timely information that allocates resources to attacking a fire.

This would be an overarching, sovereign-designed command, control, communication and intelligence, surveillance and reconnaissance (ISR) structure integrating the various systems already in place in states and territories. In other words, a “system of systems” on a national level that would be aware of fire threats, as well as the location of each firefighting asset and its capability. This system of systems approach can be platform-agnostic, pulling together disparate systems into a seamless whole.

Key to the successful implementation of a systems-based solution is the effective flow of information, with data collected, analysed, distributed and transformed into information that can be acted upon by analysts and operational commanders in a format that is quickly communicated and easily understood. The system needs to be resilient and designed to adapt to a constantly changing environment, as fire fronts move and resource availability changes.

In effect, this is battlefield visualisation, replicating military processes and seeing the fire as the enemy, with trucks, aircraft and firefighters as the resources and personnel.

Technology development in recent years has created an integrated ISR capability continuum of ground, cyber, space and airborne ISR domains. When coordinated effectively, this continuum enables decision-makers to manage resources efficiently, to make effective decisions, reduce chances of incident escalation, and reduce the impact and duration of rapidly evolving and complex emergencies. For emergency management, the ISR domain is a powerful element of this continuum as it offers operational advantages that are not possible through other domains.

Northrop Grumman Australia is of the view that a sovereign-designed, national, systems-based approach is the best way forward. This understanding is based on our considerable experience in developing systems that produce a common operating picture for different users, in addition to our background in operating these systems in an allied, cross-border context.

Recommendation one: Establish a “system of systems” approach that shares information via a central agency to coordinate surveillance and firefighting efforts, learning lessons from the Australian Defence Force’s approach to battle management. In essence, a single source of truth and common situational awareness.

ESTABLISHING A CENTRAL FIREFIGHTING AGENCY

A centralised command, control and communication centre is a vital element of any national response. As was seen during the bushfire season, and during the coronavirus pandemic, a single source of truth and direction is of utmost importance.

Australia already has a central firefighting agency of sorts, the National Aerial Firefighting Centre. While its role is to act as a broker between states for access to aircraft, with no command and control capabilities, its knowledge of the aircraft available and its relationships with the various state and territory entities mean it could be well-placed to act as a central authority administering the system of systems approach to firefighting.

This central agency would provide national facilitation of inter-jurisdiction resource movements, coordinate asset locations in response to seasonal and medium-term risk, and coordinate supplementary resources and engage large fixed-wing aircraft. In this scenario, each state or territory would take a centralised approach to dispatch and strategic coordination of aircraft for fire suppression within jurisdictions.

It is critical that any new centralised firefighting agency is appropriately funded and equipped with the systems and technology required to manage fire threats and firefighting assets. These resources will ensure that the agency can perform a vital coordination and command and control function between jurisdictions and develop its standing as a trusted agency and core component of Australia's firefighting capability.

Recommendation two: Creating a national command and control capability that has an established common operating picture that can be easily shared in real time across stakeholders. This capability will ensure coordination of national assets and support to the states and territories.

AUDIT OF FIREFIGHTING CAPABILITIES

An integral aspect of any national approach is an understanding of the assets available to the various agencies, including firefighting equipment and surveillance assets. This would allow for a view of the whole board for any fire managers and would identify gaps in capability that could be addressed ahead of the fire season.

A national audit should involve consideration of all options available for firefighting, information management, interoperability and aerial surveillance, including unmanned aircraft that have the capability to operate 24/7, without the need to rest flight personnel. Such aircraft can operate in all environments and weather conditions, including heavy smoke, which would be hazardous for a crew. Based on our experience with the Global Hawk in California's wildfires, and the surveillance capabilities of our newest high-altitude, long-endurance, remotely piloted aircraft system – the MQ-4C Triton – Northrop Grumman Australia believes there is a vital contribution to be made from the use of remotely piloted aircraft in this context.

This audit will be a necessary precursor to investing in a system of systems approach to firefighting command, control, communications and ISR in Australia, in order to establish a baseline for current capabilities and identify where gaps exist. This would allow for funding decisions to address priority areas that maintain the integrity of the approach.

Recommendation three: Conduct an audit of each jurisdiction's firefighting, surveillance, information management and command and control capabilities to identify gaps, and provide an overall common operating picture of capability for a central agency.

Recommendation four: Consider all options for the most effective capability in surveillance and firefighting, including the use of unmanned aerial surveillance, to provide persistent and real-time surveillance.

A NATIONAL APPROACH TO OPERATIONS

The establishment of a national bushfire fighting CONOPS and standardised procedures is necessary to develop a truly coordinated approach in dealing with significant national and state emergencies such as the recent bushfires. Any such approach must be considered from a preparedness and sustainment perspective, which will mitigate the issues of spontaneous and sometimes isolated reactions when called upon to deal with disasters. A truly national, cooperative approach will consider the requirements of commonality, interoperability and supportability against a minimum equipment list that will be derived from any audits undertaken.

Reliable, real-time communications systems are essential to the conduct of firefighting operations. The high reliance on ground-based mobile networks proved to be a significant shortcoming in the most recent bushfire season. Airborne modular payloads have the capability and capacity to provide the necessary persistence with the broadest coverage that will mitigate the issues faced in high-risk, remote areas of operations.

The deployment of, and high reliance on, aircraft throughout the last bushfire season was significant and impactful. To maximise the benefit from these assets, the airworthiness of the aircraft used for surveillance and firefighting is of utmost importance, as aircraft grounded and awaiting maintenance are obviously of no use, while lives are at risk if maintenance is not carried out properly.

The development of a national sustainment capability, with aircraft able to be maintained at designated centres would be in the national interest. This would be a role for the central agency to coordinate, dispatching aircraft to the nearest facility, rather than a “home base” for necessary repairs. This model is well-proven and could be considered against the Royal Australian Air Force’s adaptive basing concepts, where whole maintenance and sustainment packages shift from airport to airport quickly as the fire evolves.

Northrop Grumman Australia would welcome further engagement with the Royal Commission, in the first instance, to gauge views on the effectiveness of a forward-deployed airlift and aerial surveillance capability. Northrop Grumman Australia would also welcome the opportunity to discuss options for Australian industry to support the deployment of aerial assets with ongoing sustainment and maintenance, to maximise operating hours and generate greater asset utility in support of firefighting efforts.

Recommendation five: Establish a national Concept of Operations (CONOPS), standardised procedures, and a detailed appreciation of firefighting assets including common, minimum equipment lists. Collectively, this will ensure commonality, supportability and interoperability at the national, state and territory levels.

Recommendation six: Given the destruction of mobile towers and the loss of power/battery life within eight hours, the need for persistent airborne communications or low-cost satellite nodes should be actively considered to provide a common and reliable communications solution that will enhance the timeliness of decisions in/to/from the fire-grounds.

CONCLUSION

A national approach to firefighting that pools resources under a centralised command, control and communication structure would greatly enhance Australia’s capability to deal with increasing fire activity. This would be supported by a coordinated aerial surveillance capability.

Such a structure would require cooperation between federal and state agencies, but this is not beyond anyone’s capability or experience. As observed during the current coronavirus pandemic, various levels of government are working together in addressing the threat, with the public and private health systems pooling resources. Looking further back, and perhaps more closely related to the topic at hand, the Australian Maritime Safety Authority, which replaced various state-based search and rescue systems, is an excellent example.

A key benefit of a system of systems approach means that each jurisdiction can continue maintaining its own approach to fighting fires and structuring its agencies. So long as a baseline level of capability is achieved, and agreement reached on resources, the overarching system can simply connect them together.

The development of this system of systems approach involves the coordination of intelligence from air, space and ground assets. It also requires the integration of state, territory and federal agencies, private contractors, the ADF and even foreign contributions. What we are describing is, in effect, the replication of a battlefield approach to gathering, interpreting and distributing intelligence and subsequently coordinating assets to prevail.