

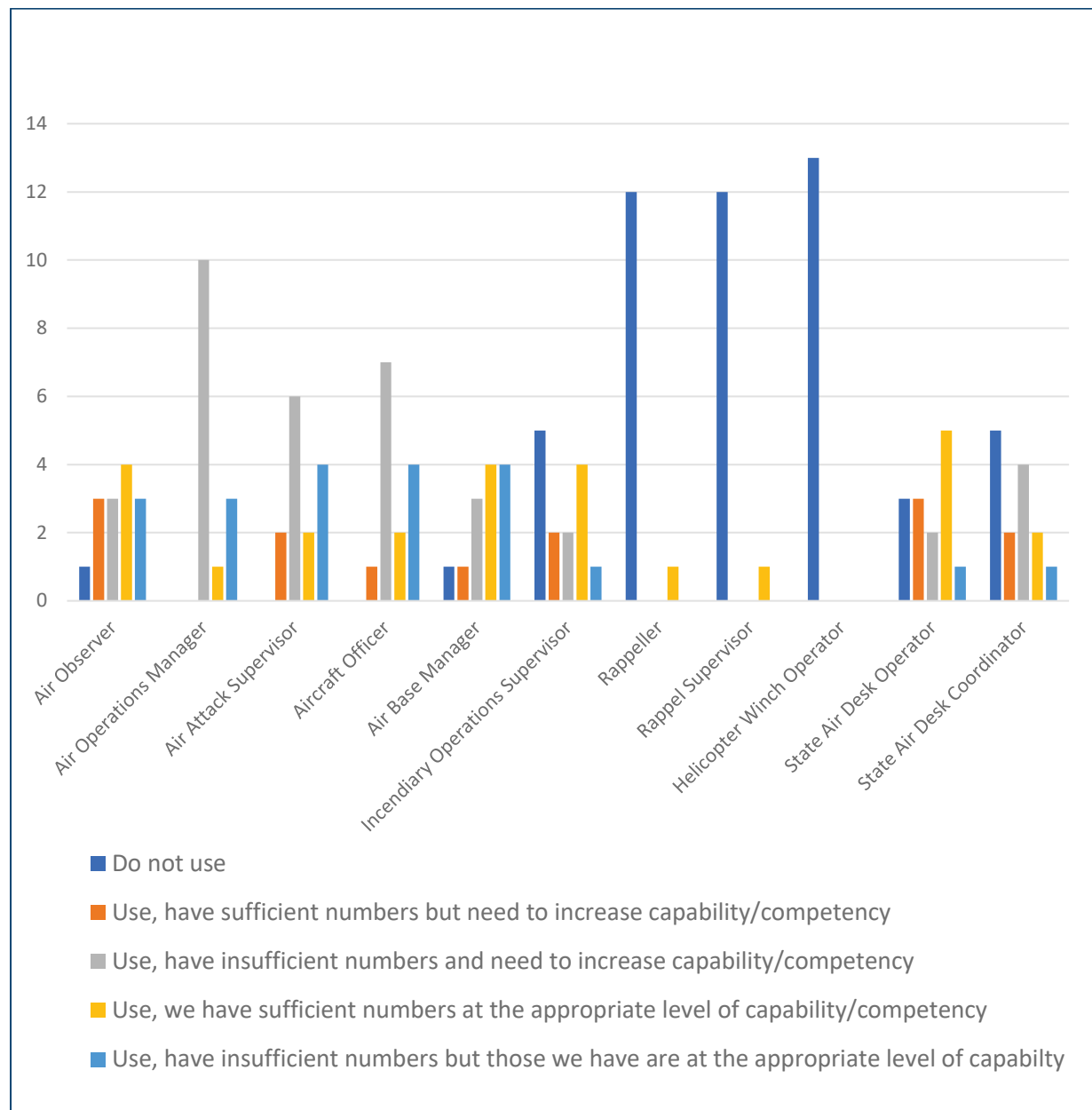
## Aviation Simulation evaluation report summary

September 2020

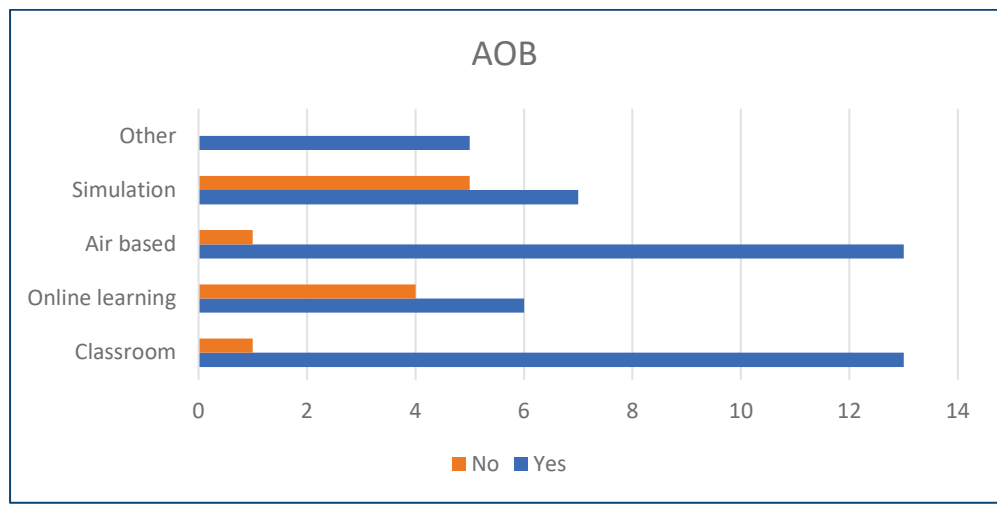
As part of the Simulation to Support Aviation Capability project, a survey was circulated to 14 key jurisdictional stakeholders to gain a better understanding of how simulation is currently being utilised within agencies for training and exercising, where the gaps in the use of simulation are, and to identify where the development opportunities exist. This report summarises the results of this survey, of which there were 18 respondents, which will build on information that came out of the interviews conducted by Geoff Conway last year.

Questions 1 to 5 related to identification and contact details for each of the respondents.

**Q 6. Using the rating scale below, confirm which of the following applies to each of the aviation roles specified.**



**Q7. Which of the following learning strategies are used by your agency for training and assessing Air Observers (AOBs) and briefly describe the approach?**



The learning strategies adopted by agencies for the Air Observer role is as follows:

- All agencies (94%) with the exception of 1 uses **classroom teaching**
- 54% of agencies utilise **online learning**
- All agencies (94%) with the exception of 1 uses **air-based practice**
- 69% utilise simulation of some sort

The following comments of interest were received for each of the learning strategies:

**Classroom**

- Couple of days in the classroom, powerpoint based with verbal and written assessments used. Part of accredited training package.
- Group learning along with introduction of VR.
- New Zealand does not use the dedicated Air Observer role but does incorporate the duties within the Air Attack and Air Support (Aircraft Officer) roles.
- Introduce concepts and planning of the practical air borne components. Still use paper maps, but including digital tablet use.
- All powerpoint based. Will be using flight simulators as a trial this season.
- Blended learning activities including classroom instruction and facilitated learning activities. These include non-digital learning simulation activities, such as drop sheets and aircraft models.
- A large amount of time of the training is someone standing at the front of the room talking to them for extensive lengths of time.
- The course is run in a classroom of maximum of 12 candidates. Instructors are provided to discuss the topics and also assist in answering questions. Powerpoint presentations and practical demonstrations are used.

**Online learning**

- Some online resources are available, however, still some way to go to develop comprehensive tools.
- Used for pre-course information. Will move to online assessment using iPads in the next 12 months.
- Prior to selection to become an air observer, potential participants can go online and view an induction and briefing on the roles and responsibilities of an AOB.
- This option is not used in Victoria. This limits availability for staff and in particular is a barrier for women who have children.
- There are required pre-requisites in the QFES training structure that allows the students to progress through to being able to nominate for a position on the course. Some is online, others require face-to-face training.

### **Air-based**

- Navigation and mapping exercises for all trainees.
- Use multiple aircraft, done alongside AAS course.
- Two days of practical learning on a number of scenarios with a mentor providing support and final assessment.
- 4 x air-based practical exercises.
- 3 days of practical flying, each training must take what they have learnt in the classroom and demonstrate that in the aircraft environment.
- We spend too much time in the air. Will be using flight simulators as a trial this season.
- Facilitated learning as an onboarding process, which includes validation flights prior to the residential course to determine if the individual is fit for flight and can operate functionally in a light aircraft.
- This is done well in some regions, but due to costs is limited.
- Supervised air hours and mentoring.

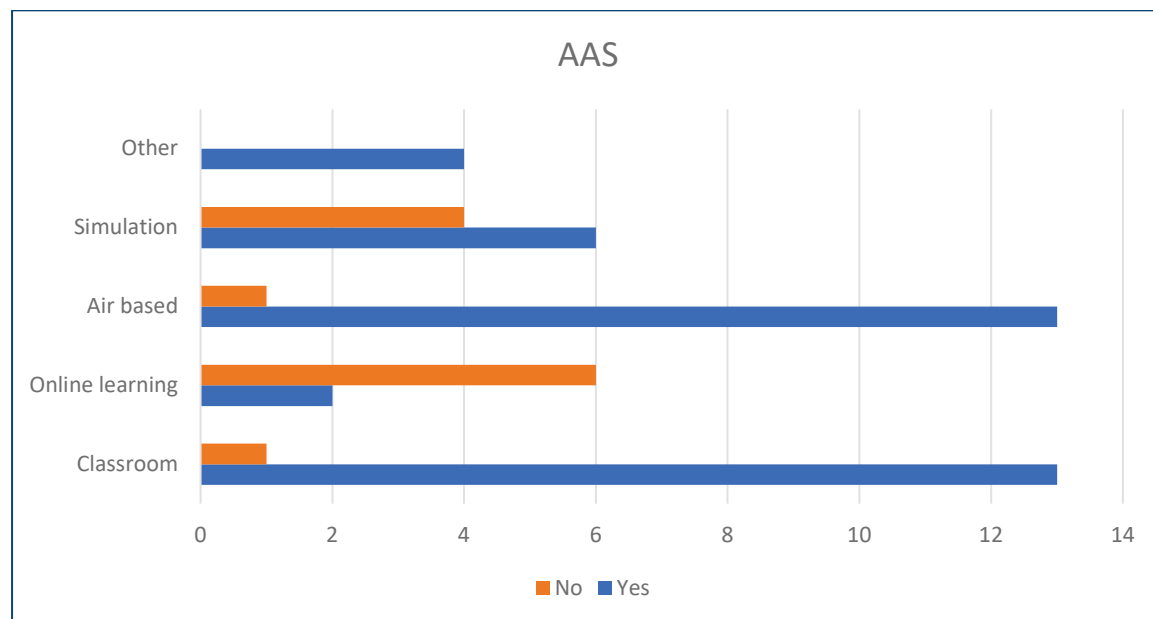
### **Simulation**

- Classroom based, navigation and mapping exercises. Part of accredited training package.
- Not at this time however augmented and virtual reality simulation in the process of being procured and implemented.
- We have made use of the PhD study conducted at the Human Interactive technology Lab - Canterbury University, NZ to simulate over-flights as part of our AAS and ASS training Modules.
- Will be using flight simulators as a trial this season.
- Ground-based simulation activities have been in use for some time. A flight simulator is in construction and design currently that will be used as a classroom training resource. While assessment is a long-term goal for flight simulation, the current resource is focused more about consolidated and experiential learning than assessment.
- Nil computer based at this time except for physical simulation in walk through scenarios on a hangar floor with targets and models.

### **Other**

- Other prerequisites as a part of this training course - WSAA, communications unit.
- Post course under supervision workbook for candidates to collect evidence and feedback of the work they are undertaking. Final sign off as AOB occurs once workbook complete.
- Trainees are selected via a submitting an expression of interest (EOI). applicants must provide a CV and address 6 key requirements questions. From there a poll of applicants are invited to an interview followed by a desk top practical skills assessment. from this typically up to 6 applicants are invited to undertake the course.
- Annual currency flights and pre-season training exercises.

**Q8. Which of the following learning strategies are used by your agency for training and assessing Air Attack Supervisors (AASs) and briefly describe the approach?**



The learning strategies adopted by agencies for the Air Attack Supervisor role is as follows:

- All agencies (94%) with the exception of 1 uses **classroom teaching**
- 36% of agencies utilise **online learning**
- All agencies (94%) with the exception of 1 uses **air-based practice**
- 71% of respondents utilise simulation of some sort

The following comments of interest were received for each of the learning strategies:

**Classroom**

- Couple of days in the classroom, powerpoint based with verbal and written assessments used. Part of accredited training package.
- In depth classroom session along with pre-course before course. Group decisions are encouraged to bring out learning points.
- Requirements of the role as an AAS including 'Day in Life of/
- 5-day course module after all prerequisites for the course have been completed including that of Air Support Supervisor (Aus - Aircraft Officer). Course covers leadership and management in a dynamic, complex adaptive system, threat and error management, high reliability organisations and the mechanics of the AAS role.
- On a 2 day course, AAS firefighters are flown to a central location to undergo currency training and to certify proficiency. On the first day bookwork style exercises with calculations etc. as well as PowerPoint presentations and educational videos are utilized to brush up on knowledge. There is also a role-play exercise that is conducted to evaluate trainees' ability to handle multiple conversations simultaneously and to establish if what they learnt in the classroom is being transferred into practice.
- Previously have utilised positions on interstate courses. This year SACFS will be conducting 5 day course in SA based on national competencies.
- RFS run the NSW AAS program: using mixture of classroom and airborne practical.
- Blended learning activities including classroom instruction and facilitated learning activities. These include non-digital learning simulation activities, such as drop sheets and aircraft models.
- As per AOBs - to much classroom time.
- The course is still being built but will have classroom elements.

### **Online learning**

- Some online resources are available, however, still some way to go to develop comprehensive tools.
- Articles of interest are posted online and through Email accounts to the FENZ aviation cohort. These are people who have attended the AAS or ASS course. No formal online learning takes place at present.

### **Air-based**

- Observation flights with an experienced AAS then multiple front seat with a variety of aircraft. Trainee progresses from single aircraft to multiple aircraft / types / complexity of incident.
- 1-1 instruction
- Two days of working with different and multiple aircraft. First used as a teaching/learning while in the air working the aircraft. Second day used for assessment
- On both the AAS and ASS courses, candidates have to deal with "live" aircraft scenarios involving water bombing helicopter and fixed-wing aircraft set up as an air division. The AAS candidates have to undergo AAS evaluations in classroom, AV simulation and real aircraft management environments
- On the 2nd day of the course, there is generally a live field exercise where a few aircraft are used to attack a fire line represented by road cones. Trainees are placed in the Air operations platform (AOP) helicopter and try to implement what they had learnt in the previous classroom training.
- 2 days off practical learning on a number of scenarios with a mentor providing support and final assessment
- 3 days of practical flying, each trainee must take what they have learnt in the classroom and demonstrate that in the aircraft environment.
- We spend too much time in the air. Will be using flight simulators as a trial this season.
- Facilitated learning as an on-boarding process, which includes validation flights prior to the residential course to determine if the individual is fit for flight and can operate functionally in a light aircraft.

### **Simulation**

- Classroom based. Used for comms planning, incident planning, procedure for actual incidents.
- Being introduced and used more often. Very cost effective and enables the ability to challenge trainees in a safe environment.
- Very limited at the moment however would benefit for greater use of simulators
- Not at this time however augmented and virtual reality simulation in the process of being procured and implemented.
- We have made use of the PhD study conducted at the Human Interactive technology Lab - Canterbury University, NZ to simulate over-flights as part of our AAS and ASS training modules. FENZ has funded a second PhD study in this field with the theme of High Risk - High Cost training environments
- In the last few years, we have been trying to integrate the new VR and MR technologies into this space, with relatively good success. On these training courses, the radio role play is enhanced by using the VR/MR technology and keeping the radio chatter element as a way to create more stress. This approach has been very successful as the trainers who are already familiar with the radio roleplay exercise can easily run the same system/method with the trainees, making it a lot easier for them to use the technology. Someone (i.e. me) must be there to ensure the technology is running smoothly so that the trainers can focus on their objectives.
- Will be using flight simulators as a trial this season.
- Ground-based simulation activities have been in use for some time. A flight simulator is in construction and design currently that will be used as a classroom training resource. While

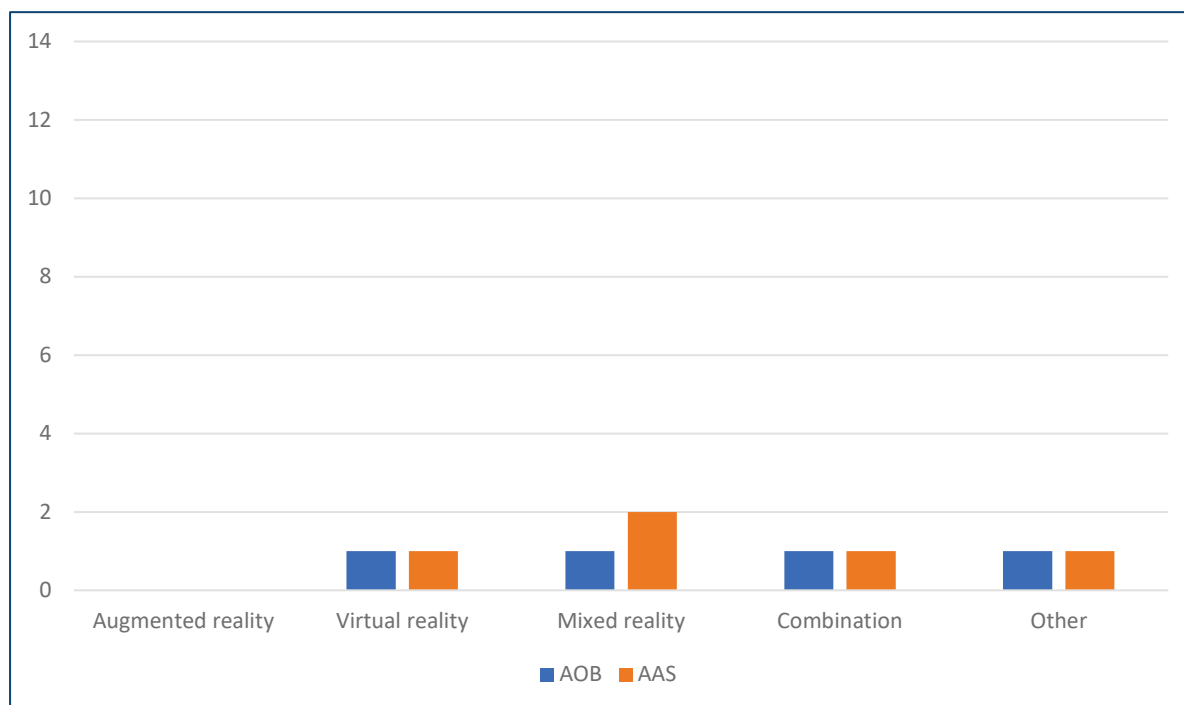
assessment is a long-term goal for flight simulation, the current resource is focused more about consolidated and experiential learning than assessment.

- It is intended that AAS will have a computer simulation scenario, with physical simulations on tactics with hard copy maps and models.

#### Other

- AAS trainees not deemed competent until they have managed actual fires under the guidance / supervision of an experienced AAS.
- Field based learning is a key part to develop skills and confidence as is shadowing other AASs.
- Trainee Air Attacks supervisors are drafted from the pool of Air Observers or Air Intelligence Officers.
- Annual currency flights and pre-season training exercises.

#### Q9. Which of the following types of simulation are used to train and/or assess AOBs and AASs?



Only 5 of the respondents answered this question.

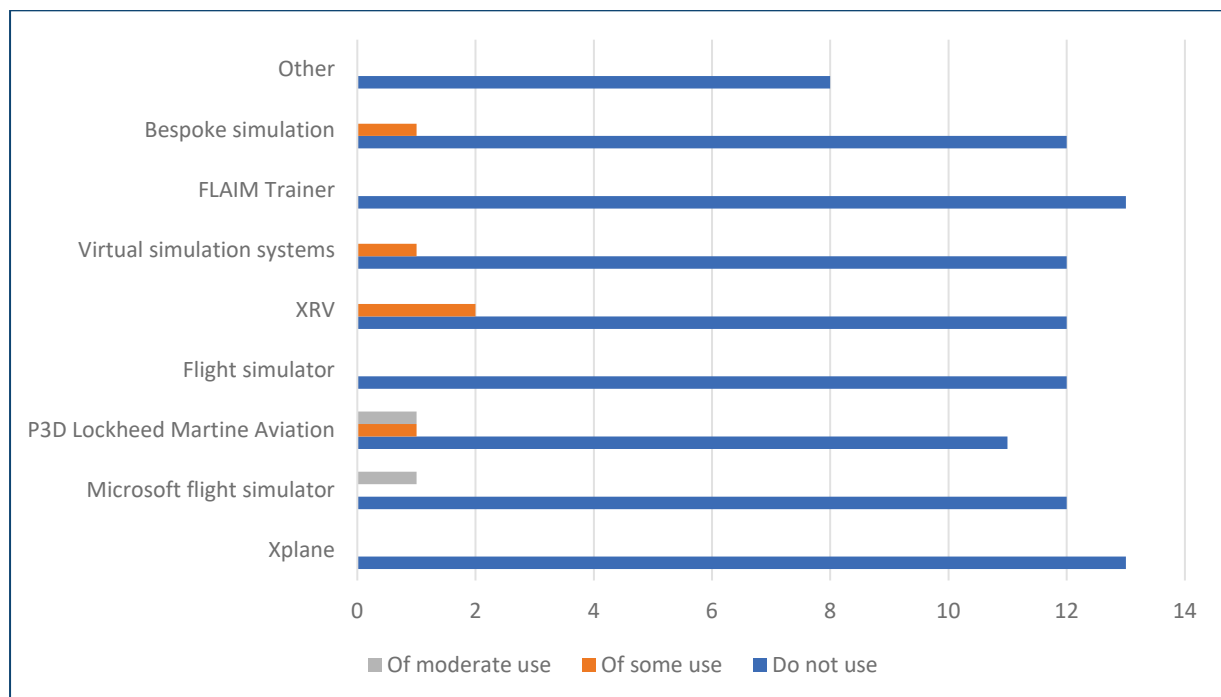
- 1 agency indicated that they use virtual reality for both roles
- 1 agency uses mixed reality for the AOB role and 2 agencies use it for the AAS role
- 1 agency indicated that they use a combination for both roles
- 1 agency indicated other

#### Comments of interest:

- Not currently used at this time however augmented and virtual reality simulation in the process of being procured and implemented.
- AR is used in a number of the evaluation scenarios we use for our Air Support Supervisors (Aus - AOB) and AAS. We use a mix of real radio traffic, supplemented by images and background aviation radio "chatter" to simulate a fire response and the test the roles of ASS and AAS as part of those courses. VR is used in a total immersion simulation using the facilities at the Human Interactive Technology lab at Canterbury University NZ to simulate real-time scenarios.

- We have been trialing the use of VR and mixed reality projection based simulation through my PhD research. It was predominantly used in conjunction with an existing radio roleplaying exercise that was developed for existing AAS training, based on an actual fire event. Groups of trainees would use handheld radio to provide helmetfire or the audio chatter, combined with the visual stimulus of the aerial firefighting being recreated using Lockheed Martins P3D and the Lorby Wildfire extension. The VR had also been used as an exposure tool without any radio chatter to give potential AOB's or AAS an exposure to the role, which was less intensive than the standard training role-play. The full exercise was considerably more stressful, more closely reflecting the stress experienced in a real fire event.
- We only use video however will be using flight simulators as a trial this season.
- As we have not yet incorporated computer simulation so we are unable to comment on the above, but we wish to be involved with the project to establish the most effective but cost efficient means of doing so.

**Q10. Using the rating scale below, confirm which of the following simulation products are used by your agency to train and/or assess AOBs.**



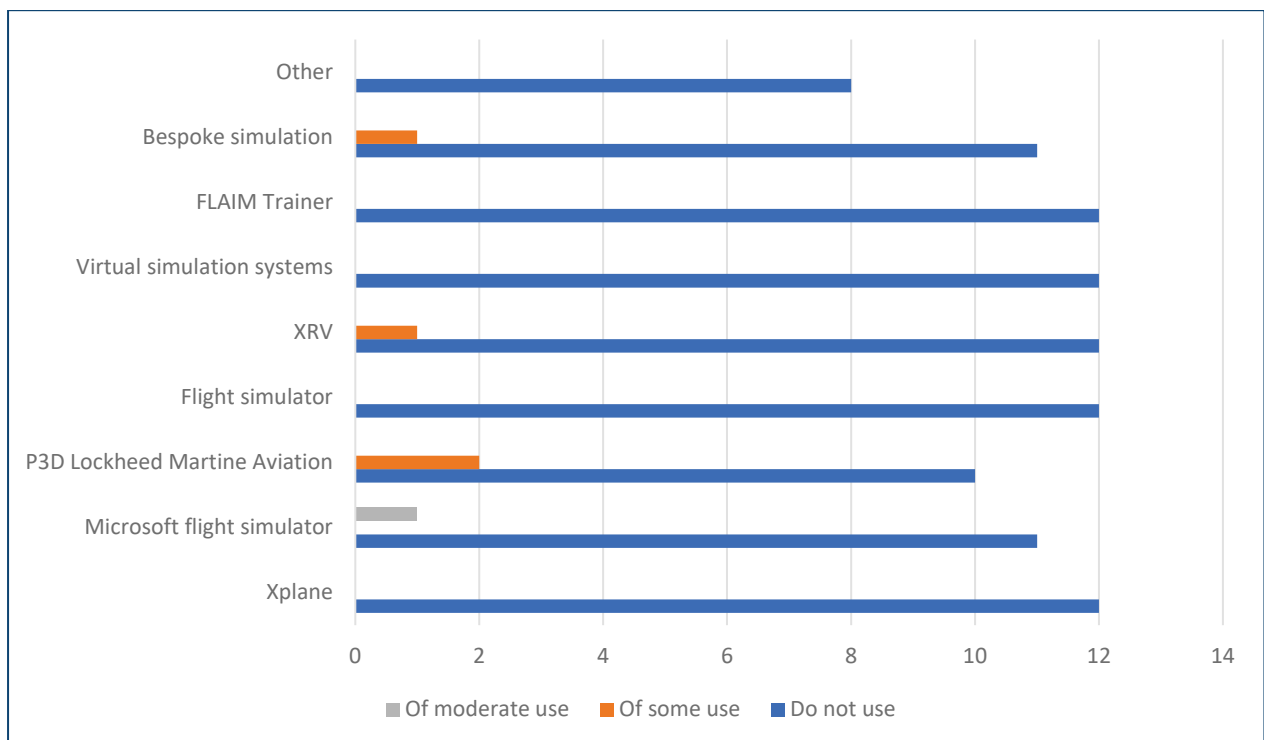
Of all the respondents who answered this question:

- 0 agencies use Xplane
- 1 agency uses Bespoke simulation
- 0 agencies use FLAIM Trainer
- 1 agency uses virtual simulation systems
- 2 agencies use XRV
- 0 agencies use a flight simulation
- 2 agencies use P3D Lockheed Martine Aviation with 1 indicating is of moderate use, and the other indicating is it of some use
- 1 agency uses Microsoft flight simulator
- 0 agencies use Xplane.

Comments:

- 1 agency will be using flight simulators as a trial this season for the first time
- 1 agency has done some work with XVR but not really used for mainstream learning and Development
- 1 agency has XVR for other fire training simulation
- At present, the PhD study has used the Canadian Lorby LWR software system for the VR environments we have used to date. The Australian AOB role is incorporated into our more generalist Air Support Supervisor role as NZ does not require dedicated airbase role at present.
- Please see previous question, keen to understand the general ideas and work with the group for what best to utilise.

**Q11. Using the rating scale below, confirm which of the following simulation products are used by your agency to train and/or assess AASs.**



Of all the respondents who answered this question:

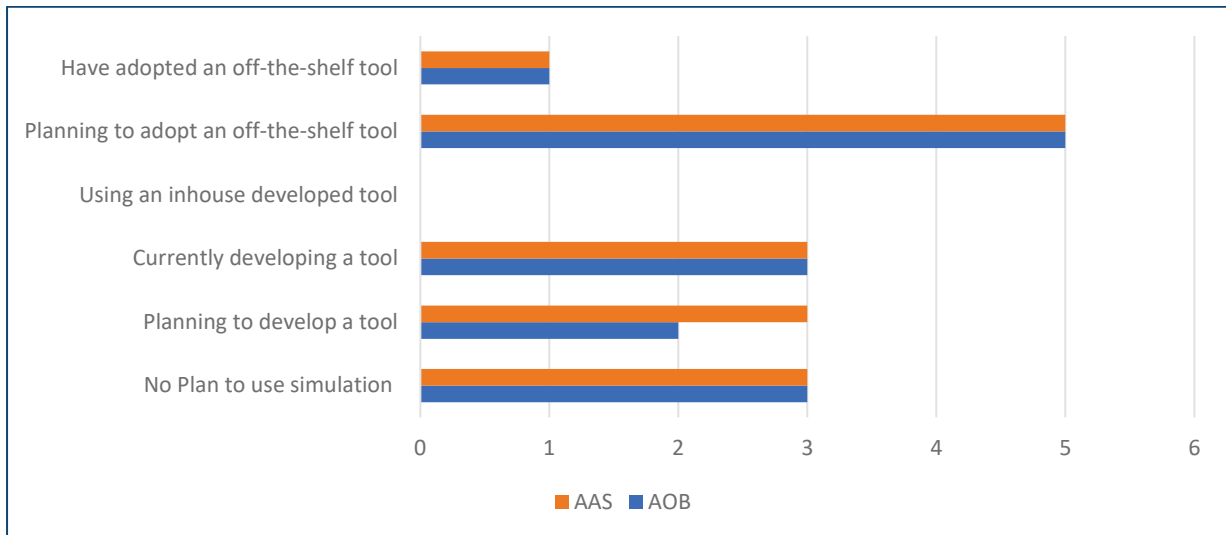
- 0 agencies use Xplane
- 1 agency uses Bespoke simulation
- 0 agencies use FLAIM Trainer
- 0 agencies use virtual simulation systems
- 1 agency uses XRV
- 0 agencies use a flight simulator
- 2 agencies use P3D Lockheed Martine Aviation
- 1 agency uses Microsoft flight simulator
- 0 agencies use Xplane.



Comments:

- 1 agency will be using flight simulators as a trial this season for the first time
- At present, the PhD study has used the Canadian Lorby LWR software system for the VR environments we have used to date.
- Not at this time however virtual reality simulation in the process of being procured and Implemented

**Q12. Using the rating scale below, describe your agency's readiness to adopt a simulation tool to train and assess AOBs and AASs**



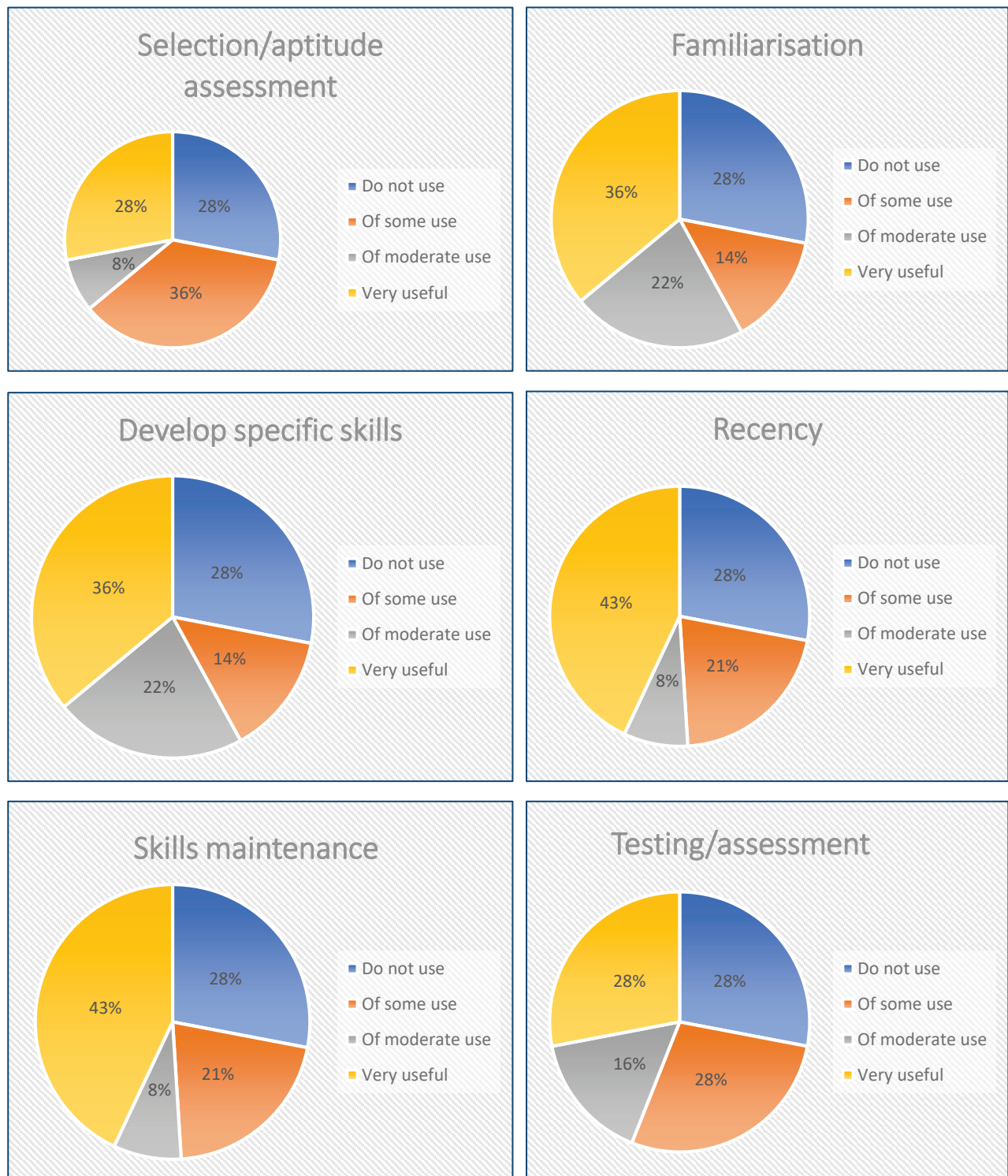
Of the 18 respondents:

- 1 agency has adopted an off-the-shelf tool to train and assess AASs
- 1 agency has adopted an off-the-shelf tool to train and assess AOBs
- 5 agencies are planning to adopt an off-the-shelf tool to train and assess AASs
- 5 agencies are planning to adopt an off-the-shelf tool to train and assess AOBs
- No agencies are using an inhouse developed tool for either roles
- 3 agencies are currently developing a tool for both roles
- 3 agencies are planning to develop a tool for the AAS role, and 2 agencies for the AOB role
- 3 agencies have no plan to use simulation for either role.

Comments:

- No formal process in place to use simulation for either.
- FENZ has been involved in one PhD study on this subject at Canterbury University and at present, is funding a second PhD study themed High Risk - High Cost training environments.
- We have in a basic form a system to conduct training exercises, but now we need to create more content as in the radio exercises to keep the experience fresh and move into using the system for accreditation and deploying the technology throughout the regions so they can be used on a more frequent basis.
- Using flight sim as a trial this year and looking to upgrade to the Lorby product.
- We would be interested but as yet have not considered or invested in technologies
- Because the TFS currently has no ability to training or conduct skills maintenance an off the shelf training simulation package would greatly benefit the organisation
- We are in the early stages of working through how to implement and what to implement to support our AAS and AOB courses. Much more work required here

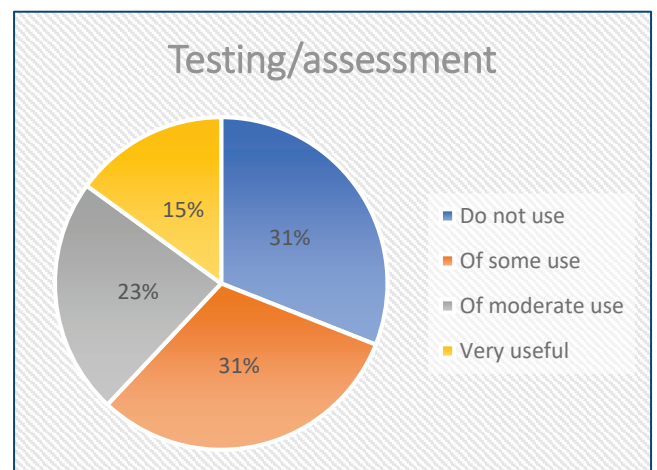
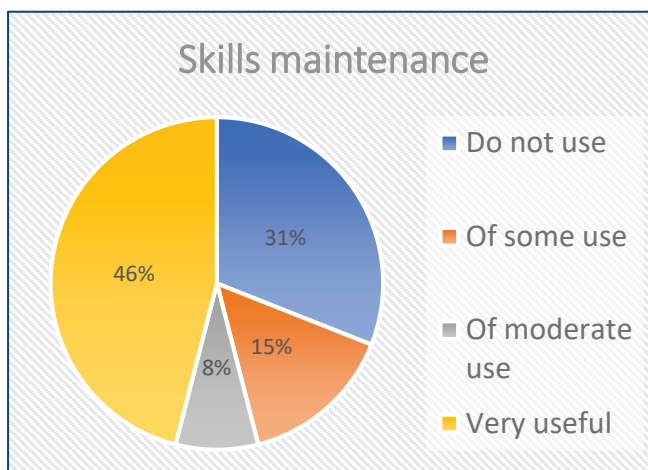
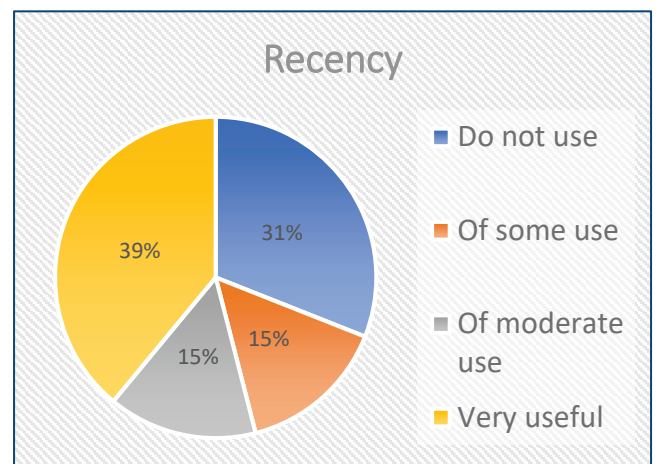
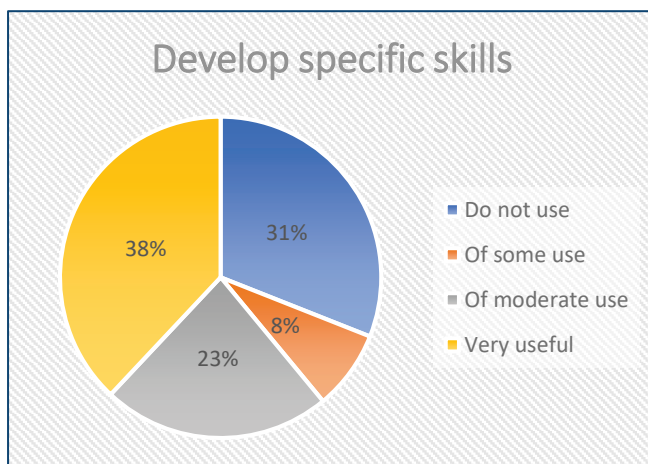
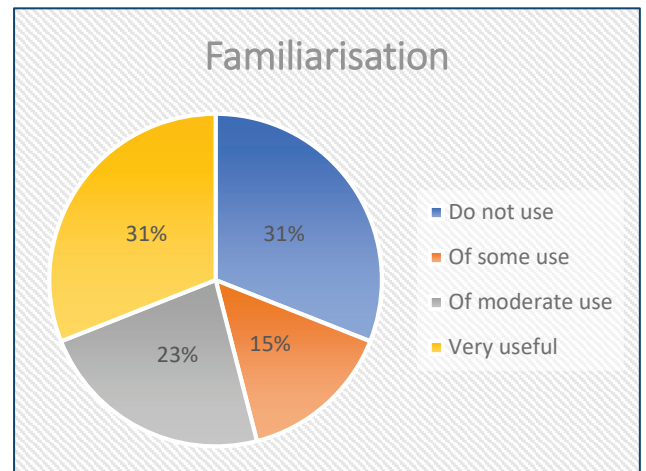
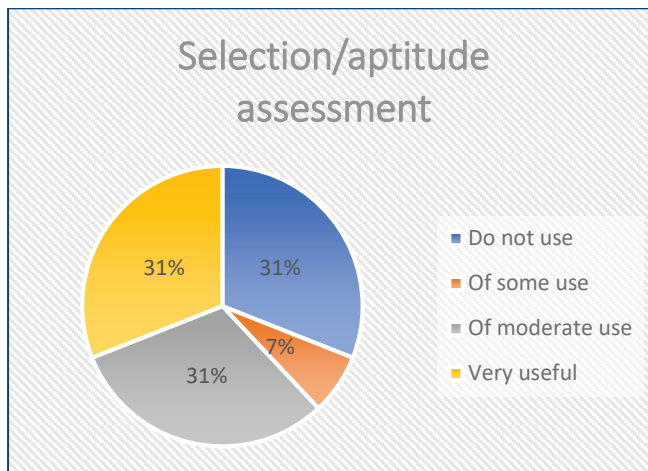
**Q13. Using the rating scale below, which of the following best describes the reason for using simulation to train and assess AOBs**



**Comments:**

- Whilst we don't use sim, I believe it to be beneficial in all of the above-mentioned aspects of training.
- There is value in each of these outcomes
- Variation of environments, frequency of scenario sessions, ability to train to situations that would be impossible or unsafe to attempt in live environment.
- I have answered based on if ACT had a simulator

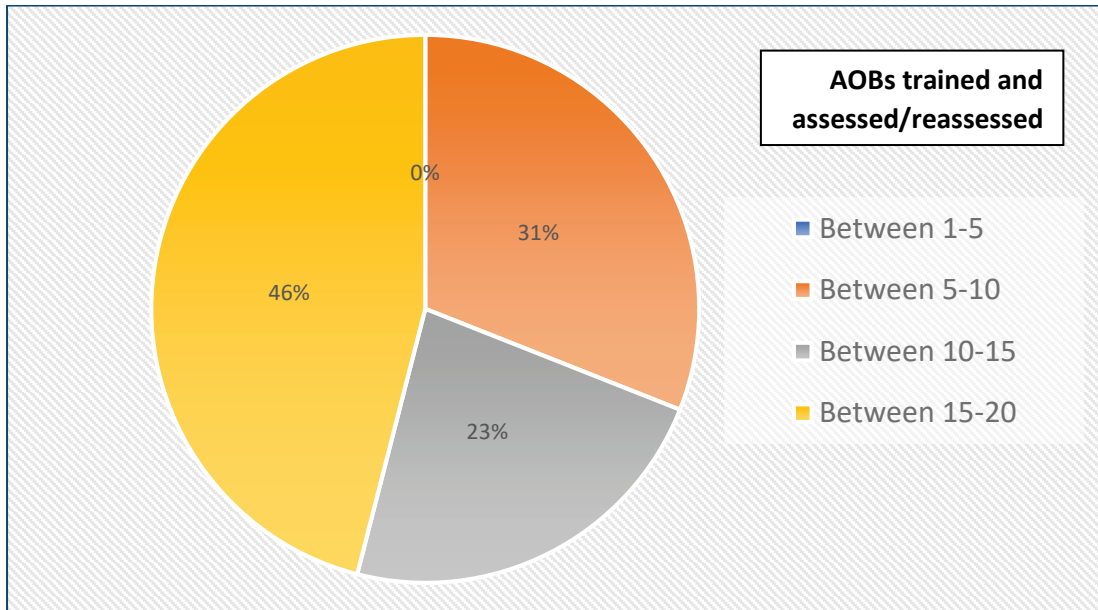
**Q14. Using the rating scale below, which of the following best describes the reason for using simulation to train and assess AASs**



**Comments (same as for question 14):**

- Whilst we don't use sim, I believe it to be beneficial in all of the above-mentioned aspects of training.
- There is value in each of these outcomes
- Variation of environments, frequency of scenario sessions, ability to train to situations that would be impossible or unsafe to attempt in live environment.
- I have answered based on if ACT had a simulator

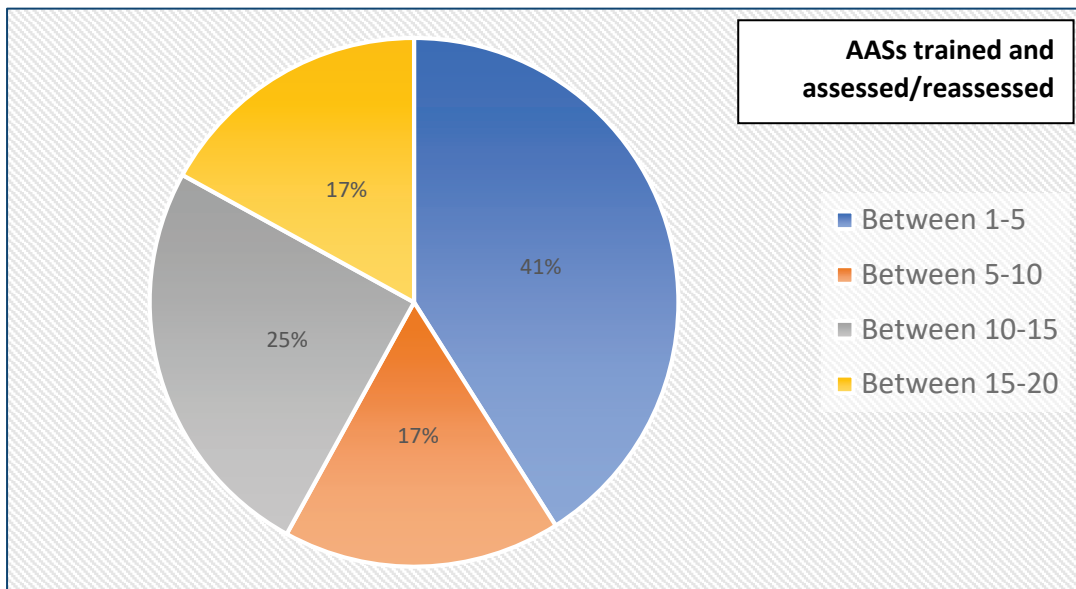
**Q15. How many AOBs are trained and assessed and/or reassessed annually within your agency?**



Two comments:

- Approx. 20-30 each year, depends on departmental demand. No annual reassessment process in place for AOBs.
- AOB is part of the AAS role.

**Q16. How many AASs are trained and assessed and/or reassessed annually within your agency?**



Three comments:

- 1 - 5 qualifying each year. 15 - 20 currency each year. DFES aircrew also participate in this training.
- AAS courses are not run annually as we need to match numbers with projected exposure and use in the role on actual fires. Our aim to ensure we 25-30 active and fully accredited AAS in NZ at any one time to meet expected demand. Our Air Support Supervisors are trained in managing small events where we have up to three aircraft involved of similar type (Type 2 and 3 helicopters and SEAT's).
- Trained by RFS: usually 4-8 from NPWS

**Q17. Which of the following are used to maintain the skills of AOB and AAS personnel??**

The responses to this question as follows:

- **Regular refresher training through use of simulation**  
2 agencies use this for AOB role and 4 agencies for the AAS role
- **Online**  
No agencies use this for AOB role and 1 agency for the AAS role
- **Air-based**  
13 agencies use this for AOB role and 14 agencies for the AAS role
- **Blended approach**  
9 agencies use this for AOB role and 10 agencies for the AAS role
- **Tests**  
4 agencies use this for AOB role and 5 agencies for the AAS role

Comments:

- The AOB role is incorporated into the Air Support Supervisor role in NZ. An Air Division cohort is run each year of all AAS and ASS staff. In addition, a number of this group are brought in to assist on other aviation training exercises etc.
- Recurrency training has stalled for many roles due to costs
- We undertake a mix of theory and practical annual currency training for all aircrew roles.
- Practically refreshed prior to the start of bushfire season as an exercise based on experiences from current AOB's and AAS. Required skills maintenance is as and when required basis and on availability from interstate.

**Q18. Using the rating scale below, which of the following are potential benefits of using simulation?**

	No use	Of some use	Of moderate use	Very useful
Improve air-to-ground communications	0%	14%	36%	50%
Train senior incident managers to understand air ops capability and regulatory arrangements	0%	21%	29%	50%
Improve IMT's understanding of which aircraft is a good fit for the fireground/incident	0%	14%	50%	36%
Opportunity to introduce pilots to fireground terminology and operations	0%	21%	29%	50%
Opportunity for trainees to interact and learn from each other	0%	14%	21%	65%
Practice emergency situations	0%	14%	14%	72%
Practice managing problems	0%	14%	21%	65%
Enable aircrews to experience a range of situations and to understand tactical approaches	0%	0%	14%	86%
Support aerial intelligence gathering capabilities	0%	14%	29%	57%
Simulate simple to complex operations	0%	7%	14%	79%
Scenario role plays for individual roles	0%	0%	29%	71%
Scenario exercises for teams	0%	0%	35%	65%

All respondents indicated that simulation had potential benefits with all the tasks listed, with the majority (75% or more) rating simulation as being of 'moderate use' or 'very useful'. The usefulness rating was highest for:

- Enable aircrews to experience a range of situations and to understand tactical approaches
- Scenario role plays for individual roles
- Scenario exercises for teams
- Simulate simple to complex operations.

Overall, simulation was believed to have potential benefits across all training scenarios listed.

Four respondents commented as follows:

- Pretty difficult to answer given absolutely no understanding of what simulation training is composed of.
- The biggest benefit of SIM is the reduced cost of having to fly aircraft
- Very useful for all of the above. In a state as diverse and large as Queensland, simulation must be part of a future strategy for sustainable training.
- All would be significant in the development of current personnel as well as IMT understanding of the roles, it would also help in the recruitment of personnel for suitability for the positions. This method of simulation training would also benefit those AOB & AAS for deployment Interstate for familiarisation for the surrounding they are expected to work in.

**Q19. Using the rating scale below, how useful do you believe simulation would be for each of the following:**

	No use	Of some use	Of moderate use	Very useful
Skills acquisition	0%	7%	57%	36%
Skills maintenance	0%	7%	57%	36%
Skills practice	0%	7%	14%	79%
Augment training	0%	8%	15%	77%
Build team/Crew Resource Management capability	0%	21%	0%	79%

All respondents indicated that simulation useful with all the tasks listed, with the majority (79% or more) rating simulation as being of 'moderate use' or 'very useful'. The usefulness rating was significantly highest ('very useful') for:

- Skill practice
- Augment training
- Build team/crew resource management capability.

Skills acquisition and skills maintenance still rated highly on the 'of moderate use' rating.

No comments were received.

**Q20. Would you support the development of a tool to help in the identification of suitable candidates to be trained as AOBs and AASs?**

100% of respondents answered in the affirmative for this question for both roles.

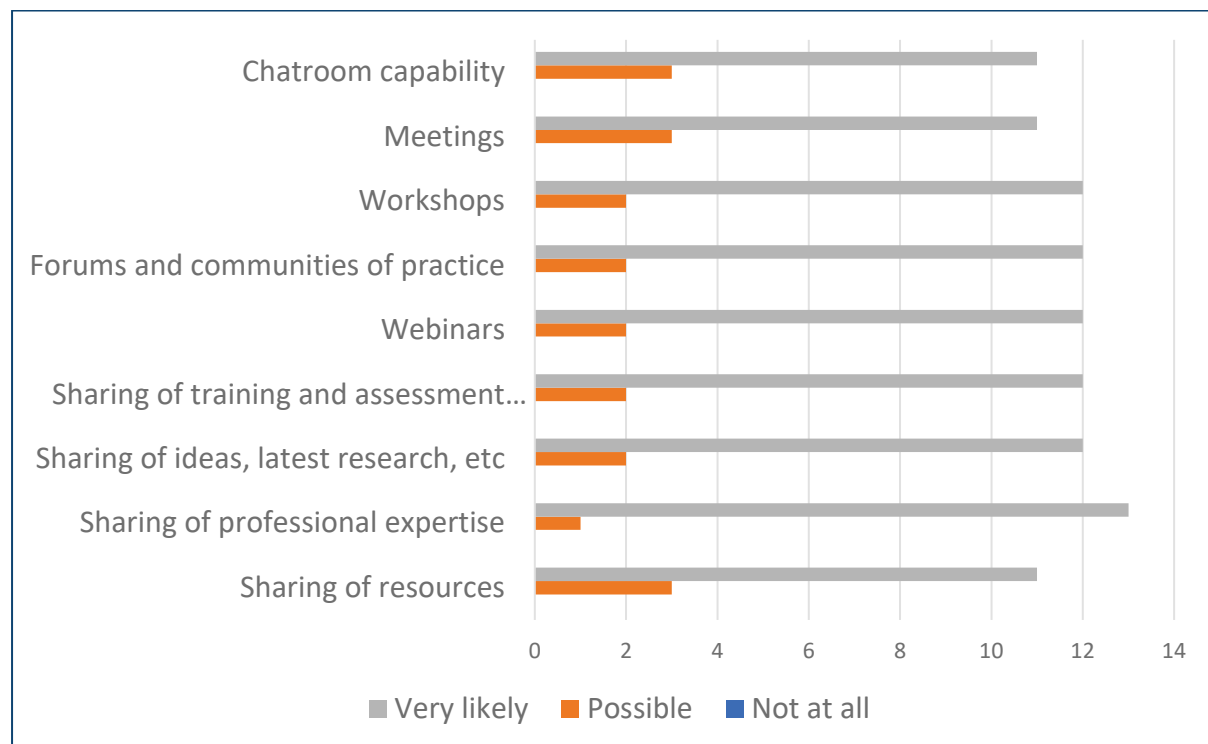
One respondent commented: 'Simulation can't predict suitability once in the air, but it could expose the candidate to the role to gauge their interest'.

**Q21. What sort of national approach to simulation would advantage your agency?**

Varied comments/responses were received for this question as follows:

- Something that matches operational application of AOB and AAS roles
- Qualifications and accreditations
- If it was shared between Australia and NZ there would be greater integration
- As we are a NZ agency, information, data and intelligence sharing is obviously of benefit to us and I would envisage all agencies as at present there are various initiatives in play. We shouldn't discount this multi-agency/multi-systems approach, compared to a one model design, as it could result in a faster build of systems, faster identification of the most appropriate model and systems (AR/VR/Mixed environment) and enhanced user uptake within their own agency structures and cultures. The art will be to keep it coordinated across the AFAC members.
- Being able to conduct more regular training with simulations and VR so that AAS and ASS skills are more current going into fire seasons
- Having a national standard
- Need consistent use across agencies to share the development cost. Concept of training hubs is ideal
- A National approach coordinated through AFAC/NAFC would see common standards and procedures adopted across all state and territory fire agencies and must include land management agencies that have fire related workforce.
- All agencies using the same simulator and recruitment and training model.
- Shared technology and standard templates, etc.
- Strategic support in policy and direction and some ongoing interstate support for sharing of resources. Each state may have their own bespoke requirements, however a framework of understanding would be of great benefit.
- A consistent approach would benefit all, cross state responses in particular.
- An off the shelf package with different scenarios from different States and terrain to give a broader knowledge to AOB & AAS so as to deploy anywhere as a National resource with national qualifications
- Recommendation of systems used individually by jurisdictions to train to a consistent level. Ability for a national approach to use the same systems per state or territory. Consistency in attempting to maintain requirements of national competencies and the ability to cross train with operators and crews from across the country in a networking sense.
- Consistency across the nation. Reduced costs with national simulator hubs.

**Q22. Using the rating scale below, how likely are you to use/participate in each of the following possible National Aviation Simulation Network activities**



All respondents indicated that they were either very likely to (or would possibly) use/participate in each of the National Aviation Simulation Network activities listed. Some of the comments received include:

- FENZ's commitment to these various avenues from enhanced learning and uptake of these systems is dependent on the formation of a dedicated aviation unit within the organisation. It is on track to be implemented as per the AFAC-led independent review and outcomes reports into the Tasman Fires but has yet to be signed off at the national level.
- Happy to contribute what we can and share ideas and concepts
- Victoria as stated above is trialing simulation use for both AOB and AAS courses this year. Victoria welcomes NAFC developing the path forward for simulators and would be happy to participate in national trials.
- I have participated in the previous symposium at Melbourne and would welcome continued interaction.

**Q23. What opportunities do you see for simulation in aviation roles in the future at your agency and nationally?**

**Within individual agencies,** opportunities identified include:

- Ignition, navigation and mapping
- Multiple training and learning opportunities
- Increased capability and skills of all involved
- Pending establishment of the Aviation Training facility at the NSW RFS Training Academy, Dubbo
- Greater professionalism
- It has a significant role to play in High risk - high cost training environments, provided the right organisational structures and management knowledge/imperatives are in play
- Currency of personnel
- Allowing others to see what the work is that the air borne rolls actually do
- Aside of what has been discussed, SIM training should extend to the ground firefighters in the used and direction of aerial assets. A simulation that exercise ground firefighters on how to request, direct, task and provide feedback to the aerial assets



- All aviation training both Air and Ground should be using simulations. Victoria is trialing and possibly having simulation as a prerequisite for all roles.
- Suite of training and exercising opportunities
- Great opportunities for a sustainable future
- Build a bigger capability with a more rounded trained personnel to a National Standard
- Cost saving and ability to provide more thorough and complex training scenarios outside of seasonal impacts.
- Limited by budget cycles and funding

**Nationally, opportunities identified include:**

- Multiple training and learning opportunities
- Increased capability and skills of all involved
- Implementation of a nationally consistent skills enhancement methodology
- Shared use of resources and facilities
- Upskilling and currency
- FENZ is the only lead agency for fire in NZ. Other organisations such as Civil Defense and other smaller response agencies such as Coast Guard, Land SAR etc., could also have an interest
- Inter-operational (standards)
- Shared training resources across jurisdictions to provide for consistency in our AOB and AAS
- Sharing of training aids and personnel. Having a national simulator team would be the perfect scenario.
- Shared resourcing
- Great opportunities for a sustainable future
- Bigger pool of personnel that can deploy around the country with confidence that all are trained to the same level
- Continuity of training on identical systems for all services.
- Needs a National approach and lead

**Q24. Using the rating scale below, would you support the set up and operation of distributed virtual hubs to support your training and assessment programs for AOBs and AASs?**

There was general support across all respondents for the set up and operation of distributed virtual hubs to support their training and assessment programs for AOBs and AASs. There was some concern over the response options for this question across both roles, but in general, there was great support for a hub, even if located outside of the respondent's jurisdiction.

Comments include:

- There is value in decentralised learning hubs that increase interoperability
- I would travel to support this system.
- Would support a hub for both roles even if in another jurisdiction
- FENZ is the only lead agency for fire in NZ. Other organisations such as Civil Defense and other smaller response agencies such as Coast Guard, Land SAR etc., could also have an interest.

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## OVERALL SUMMARY

In summary, the following observations can be made from the survey results:

### COMPETENCY AND CAPABILITY – CURRENT STATUS

In terms of numbers and capabilities of **AIR OBSERVERS** across agencies:

- 1 agency doesn't use the role of Air Observer
- 7 agencies have **SUFFICIENT** numbers of AOBs with varying degrees of capabilities/competencies
- 6 agencies have **INSUFFICIENT** numbers of AOBs with varying degrees of capabilities/competencies

In terms of numbers and capabilities of **AIR ATTACK SUPERVISORS** across agencies:

- 4 have **SUFFICIENT** numbers of AASs with varying degrees of capabilities/competencies
- 10 have **INSUFFICIENT** numbers of AASs with varying degrees of capabilities/competencies

In terms of numbers and capabilities of **AIR OPERATIONS MANAGER** across agencies:

- 1 agency has **SUFFICIENT** numbers of AOMs at the appropriate level of capability/competency
- 13 have **INSUFFICIENT** numbers of AOMs with varying degrees of capabilities/competencies

### TRAINING STRATEGIES

- There are variations in the training strategies adopted by agencies, with classroom and air-based practice making up the bulk of the training for both the AOB and AAS roles.
- Very little simulation is used, and that which is used is not of the virtual kind.
- Observation that there is too much time in the air which is a cost impost.

### SIMULATION USE AND PRODUCTS

- New Zealand is using a mix of VR and mixed reality and seem to be the most advanced (based on the responses) in terms of use of simulation for training purposes.
- A number of agencies are intending on trialing some form of computer simulation this fire season.
- Three agencies have access to simulators (generally being used for ground operational training) within their agency as follows:
  - 1 x bespoke simulator
  - 1 x virtual simulation system
  - 2 x XRV
  - 2 x P3D Lockheed martine aviation
  - 1 x Microsoft flight simulator
- 11 agencies have either adopted, plan to adopt, are developing or planning to develop a simulation tool.
- 3 agencies have no plans for the adoption or development of a simulation tool at this stage.
- The respondents felt that there were numerous potential benefits of simulation to some degree, in particular to/for:
  - Practice emergency situations
  - Enable aircrews to experience a range of situations and to understand tactical approaches
  - Simulate simple to complex operations
  - Scenario role plays for individual roles
  - Skills practice
  - Augment training
  - Build team/crew resource management capability

- All agencies support the development of a tool to help in the identification of suitable candidates to be trained as AOBs and AASs.

## AGENCY AND NATIONAL ADVANTAGES

### AGENCY

The common themes in terms of perceived benefits for agencies included:

- Multiple training, exercising and learning opportunities
- Increased capability and skills of all involved
- Greater professionalism
- Significant role to play in high risk - high cost training environments, provided the right organisational structures and management knowledge/imperatives are in play
- Currency of personnel
- Great opportunities for a sustainable future
- Build a bigger capability with more rounded trained personnel to a National Standard
- Cost saving and ability to provide more thorough and complex training scenarios outside of seasonal impacts.

### NATIONAL

The common themes in terms of perceived benefits nationally included (in addition to some of the above):

- Implementation of a nationally consistent skills enhancement methodology
- Shared use of resources and facilities
- Upskilling and currency
- Inter-operational (standards)
- Shared training resources across jurisdictions to provide for consistency in our AOBs and AASs
- Sharing of training aids and personnel. Having a national simulator team would be the perfect scenario.
- Bigger pool of personnel that can deploy around the country with confidence that all are trained to the same level

## DISTRIBUTED VIRTUAL SIMULATION HUB

There was unanimous support across all respondents for the set up and operation of distributed virtual hubs to support their training and assessment programs for both roles – even if the hubs were located outside their jurisdictions:

- *‘Would support a hub for both roles even if in another jurisdiction – I would travel to support this system.’*