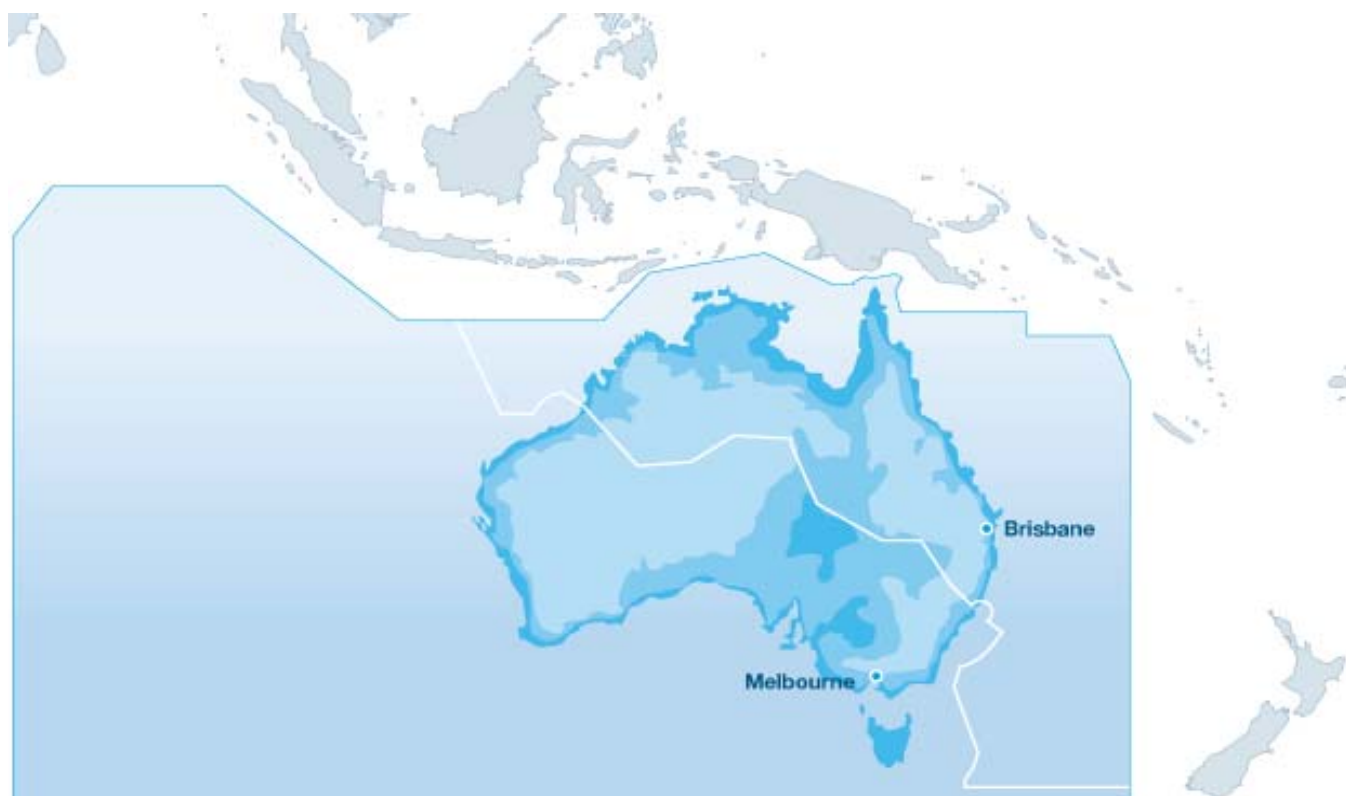# AIRSERVICES AUSTRALIA
AIR TRAFFIC CONTROL STAFFING AND
WORKFORCE PLANNING REVIEW

NAV CANADA
February 2013

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February 2013

Executive Summary

This report details the outcome of the independent review of Airservices Australia's methodology for determining the number of operational air traffic control (ATC) staff required to meet air traffic services demand, in response to concerns raised by the Civil Aviation Safety Authority (CASA).

NAV CANADA's business model is similar to Airservices Australia and is also independently regulated. For these reasons, NAV CANADA was considered a suitable peer Air Navigation System Provider (ANSP) to conduct this ATC staffing review.

Specifically the staffing and workforce plan review included:

- A review of the current Independent Requirement Review (IRR) methodology for operational ATCs and operational Supervisors (including the validation of the work standards/hours of coverage determination) to ensure that it meets Airservices' operational requirements; and

- A review of other elements of the ATC Resource Plan to ensure that organisational needs for staff with the ATC skill set are identified and planned for including:
  - o Current organisational project resource planning; and
  - o An assessment of the organisational demand for the ATC skill set, including short, medium and long term (5 years) staffing requirements to meet demand.

NAV CANADA reviewed the documentation outlining the methodology for determining the number of operational ATC and supervisory staff required. The strategic approach begins with the determination of the ATC Hours of Coverage for each Group/Unit which is conducted annually. This process links a quantitative model of the workload standard based on air traffic movements and ATC workload complexities with an independent site assessment of Hours of Coverage to generate a final Hours of Coverage outcome. A Bank of Shifts is then created from the Hours of Coverage by the National Roster Team for each Group/Unit that is compliant with the Enterprise Agreement and the Fatigue Risk Management System shift creation rules.

The methodology produces a Core and Mature set of ATC and Supervisor Staff Requirement numbers for each Group/Unit which incorporates flexibility and prioritises operational requirements. The calculation of the Core ATC Requirements is aimed at the delivery of continuous and sustainable ATC service, with provision for breaks and leave. The Mature ATC Requirement numbers account for additional activities over and above the Core, to support staff development, team activities and organisational training. The overall Airservices Australia Mature ATC Staff Requirement is 118% when compared with the Core staff Requirement number.

There appear to be a sufficient number of ATC supervisors at the Towers, based on the ATC Resource Plan. However, at non-Tower sites, it is not clear there are well defined Supervisor Roles and Responsibilities in place. As a result, a review of ATC Supervisor staff coverage, Roles and Responsibilities is recommended.

NAV CANADA found the Airservices' approach to determine the Core and Mature ATC Requirements well documented, structured and logical. The ATC Staffing Requirements

methodology is an effective strategic approach to cater for sufficient ATC staff and ensure Airservices' operational requirements are met. Airservices aims to staff at levels equal to or above the Mature ATC Staffing Requirement. A comparison of the total Airservices Mature ATC Staff Requirements with the Available ATC staff numbers of indicates 101% of air traffic controllers are available to work as of January 31, 2013. This indicates Airservices has achieved the overall Mature ATC staffing target (which is set at 18% above the Core ATC Staff Requirement).

The complexities with the number of unique ATC Endorsements and providing a work-life balance as per the Enterprise Agreement create challenges with tactical day-to-day ATC staff planning. In addition, the progressive approach to ATC operational training adds staffing constraints at the Group/Unit level. The result is ATC workload is difficult to balance because of Endorsement limitations, possible pressure to accelerate training to full Endorsement and may adversely affect ATC engagement. Overcoming the day-to-day ATC staffing challenges involves much more than identifying a target level of ATC staffing. The management of suitable ATC staff deployed at the right location and time requires several planning support tools and processes.

These tools include a sophisticated roster system, a positive labour relations environment, a strong front line management team, flexible ATC Endorsements, and ready access to ATC planned and actual resource utilisation information. There are a number of planning tools and processes that have been implemented by Airservices or are underway and others which could be considered to further improve and support the tactical ATC staffing process.

It is evident Airservices is proactively dealing with accommodating work-life balance needs based on the implementation of a sophisticated roster system acquired from Quintiq, as well as the use of overtime and Grey shifts. Leveraging existing and potential Quintiq functionality could be worthwhile to continue to improve ATC staffing flexibility. It may be possible to explore roster access for ATC staff from their personal electronic devices, or to minimise weekends or midnights worked through Quintiq's "what if" or optimisation features. Enabling ATC Groups/Units to incorporate preferences based on their input would contribute to engagement and labour relations.

Airservices has undertaken the ATC Endorsement Reform program to alleviate the constraints imposed on the operation by targeting a reduction in the number of unique ATC Endorsements from 253 to 49 Service Delivery Line/Units plus 7 Generic Endorsements in a phased approach.

The current ATC Resource Plan includes all operational Groups/Units in Airservices and indicates ATC staff and Supervisors available by month. The model is used to assist Airservices Management and the Learning Academy to consult and plan for the provision of approximately 80 ATC Endorsements per year, over 5 years, with a focus on the next 24 months. Currently, the ATC Resource Plan is a manually intensive process, consuming considerable time and effort.

This process can be improved by automating and enhancing functionality. It is recommended Projects and Engineering, Safety Assurance and other stakeholders are required to formally identify their ATC Requirements on a monthly basis through the ATC Resource Plan. In addition, ready access to actual leave data can transform ad hoc occurrences into information analytics to improve roster creation, support Enterprise Agreement development and safety analytics. The more predictable the demand for ATC staff, the more complete and timely the information on ATC availability, the higher the likelihood and assurance the demand will be met.

1.0 Introduction

Airservices Australia has requested an independent review of their methodology for determining the number of operational air traffic control (ATC) staff required to meet air traffic services demand, in response to concerns raised by the Civil Aviation Safety Authority (CASA). The scope of the review encompasses an assessment of the effectiveness of the current and 5 year Air Traffic Control Workforce Plan to cater for sufficient staff for non operational duties including projects. To enable the review to be conducted in a timely manner and to be of appropriate quality, the review is to be conducted by a peer Air Navigation Service Provider (ANSP).

NAV CANADA is an ANSP with a comparable business model to Airservices Australia. NAV CANADA is responsible for providing air traffic services in Canada and in airspace delegated by the International Civil Aviation Organization (ICAO) over the north-eastern portion of the North Atlantic Ocean. NAV CANADA is overseen by an independent safety regulator Transport Canada, with a similar role to CASA in Australia. For these reasons, NAV CANADA was considered a suitable peer to conduct this ATC staffing review.

Specifically the staffing and workforce plan review activities include:

- A review of the current Independent Requirement Review (IRR) methodology for operational ATCs and operational Supervisors (including the validation of the work standards/hours of coverage determination) to ensure that it meets Airservices' operational requirements; and

- A review of other elements of the ATC Resource Plan to ensure that organisational needs for staff with the ATC skill set are identified and planned for including:
  o Current organisational project resource planning; and
  o An assessment of the organisational demand for the ATC skill set, including short, medium and long term (5 years) staffing requirements to meet demand.

1.1 Independent Requirement Review Methodology

This section of the report reviews the methodology to calculate the ATC Requirements. Sample outputs of the process are included for Adelaide Tower for illustrative purposes.

The calculation of the ATC skill set requirements produces a Core and a Mature ATC Requirement set of numbers for each operational Group/Unit across Airservices Australia and is generated directly from the Hours of Coverage. The Hours of Coverage identifies the hours when air traffic control services are provided and has a high correlation with air traffic movements or flight minutes in a Group/Unit.

1.2 ATC Hours of Coverage Determination

The determination of the Hours of Coverage for each Group/Operational Unit involves the Manager of each Group/Unit submitting their estimate of the operational hours which they believe are required to deliver control services. A separate assessment of the hours is then conducted and may include:

1. Air traffic movements approach based on consultant work standard.
2. Flight minutes methodology (a variation of the consultant based work standard).
3. Voice Switch and Control System data (assess voice transmission workload).
4. Actual seat records at Console.
5. Comparison of historical Hours of Coverage records.

Once the separate assessment is complete, a consultative process is initiated to bring the Group/Unit Hours of Coverage in line with the separate assessment of coverage hours. Once this is accomplished the Hours of Coverage are finalised and accepted. The Hours of Coverage for Adelaide Tower are shown in Table 1 below:

Table 1 – Hours of ATC Coverage Adelaide Tower

Adelaide Tower		ATC RESOURCE REQUIREMENT							

FILL IN LIGHT GREEN CELLS ONLY   = INPUT CELL
= FORMULA
= AGREED VALUE

LAST REVIEWED	Mar-2011

HOURS OF COVERAGE

Console	Actual Hours	Mon	Tue	Wed	Thu	Fri	Sat	Sun	TOTAL
ADC	H24	24:00	24:00	24:00	24:00	24:00	24:00	24:00	168:00
COORD	M 0530-2200, SA-SU 0600-2200	16:30	16:30	16:30	16:30	16:30	16:00	16:00	114:30
SMC	M-F 0600-0800 & 1000-1100 & 1600-1900, SA NIL, SU 0800-0900 & 1200-1300 & 1700-1800	6:00	6:00	6:00	6:00	6:00	0:00	3:00	33:00
									0:00
									0:00
									0:00
									0:00
3	Total	46:30	46:30	46:30	46:30	46:30	40:00	43:00	315:30

1.3 Shift Bank Development

Once the Hours of Coverage have been accepted and finalised, a bank of shifts is created for each Group/Unit that is compliant with the ATC Enterprise Agreement and the Fatigue Risk Management System shift creation rules. These shift banks are checked for errors and revised as required until complete. The shift coverage for Adelaide Tower is shown in Table 2 below:

Table 2 – Shift Coverage Bank Adelaide Tower

SHIFT COVERAGE								
Shift Length	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
10:00								0
9:30								0
9:00								0
8:30								0
8:00	3	3	3	3	3	2	2	19
7:45								0
7:30	2	2	2	2	2			10
7:15								0
7:00	2	2	2	2	2	4	5	19
6:45								0
6:30								0
6:15								0
6:00	1	1	1	1	1	2	1	8
Total Shifts	8	8	8	8	8	8	8	56
Total Hours	59:00	59:00	59:00	59:00	59:00	56:00	57:00	408:00

Shift Statistics	
Average Shift Length	7:17
Acquittal (hours/fortnight)	72:00
Average (shifts/fortnight)	9.88

as at March 2011

1.4 Core ATC Requirements

The calculation of the Core ATC Requirements is aimed at the delivery of continuous and sustainable ATC service, with provision for breaks and leave. The Airservices Core ATC Staff Requirement calculation forms the base or lower bound staffing number that enables Airservices to fulfil Civil Aviation Safety Regulations (CASR) Part 172 obligations and provide staff with leave consistent with the Enterprise Agreement and the Fatigue Risk Management System.

The Core ATC Requirement enables priority for "business as usual" activities and accounts for Operational Coverage plus the time for Breaks, Refresher Training, Recreation Leave, Long Service Leave, Remote Locality Leave, and re-Familiarisation after Leave types.

1.5   Mature ATC Requirements

The Mature ATC Requirement numbers account for additional activities over and above the Core, to support staff development, team activities, organisational training and to facilitate the operational environment. Once the Core ATC Requirement staff numbers are determined, a Mature ATC Requirement is calculated which also takes into account the following:

- Cross Training
- Standby Shifts
- Team/Communication Shifts
- Leave Relief for Supervisors
- Coverage for Supervisor development days
- Admin Component for supervisor personnel
- Training for new staff into the group
- Development of training material
- Check and standardisation events

The Mature ATC Staff Requirement numbers for each Group/Unit cannot consider every possible situation that could be encountered in the dynamic air traffic control environment of Australia. The Airservices ATC staffing model and objective (to staff at or above Mature ATC Requirement numbers) provides a reliable framework for strategic and predictable operational ATC staff planning.

The Full Time Equivalent (FTE) expression of the Mature ATC Requirements for Adelaide Tower is shown in Table 3 below:

Table 3 – Core and Mature ATC Requirement Adelaide Tower

ATC Resource Requirement	
Core (FTE)	13.3
Mature (FTE)	15.6

as at March 2011

At this point the Core and Mature ATC Requirements are known and the shift banks can be used to create rosters.

1.6   Operational ATC Supervisor Requirements

A Core and Mature set of ATC Staff Requirement numbers is also produced for the operational Supervisory staff.

Supervisors work 7 days per week at busier Towers and Monday to Friday at Towers with lighter traffic volumes. Supervisor shifts are single-stand (work alone) for most of the shift at less busy

airports. Supervisors' shifts overlap at the end of the first shift with the start of the following shift. The schedule allots time for Supervisor administrative duties to be done during quieter traffic periods. Supervisors at moderate to busy Towers monitor 2 to 4 ATC at a time, based on data provided by Airservices. At non-Tower units, Supervisors can be responsible for overseeing as many as 17 consoles. Consoles are opened as traffic increases and it is possible to have all 17 consoles open simultaneously. However, it is unclear how the Hours of Coverage are determined for operational ATC Supervisors at non-Tower units.

Airservices may have well defined Supervisor Roles and Responsibilities. It is possible that effective Supervisory coverage combined with the operational practice of providing another "set of ATC eyes" or "spotters" is in place during very busy times to effectively mitigate risk and ensure safe and efficient supervision of ATC service delivery. However, NAV CANADA could not confirm this within the review time.

2.0   NAV CANADA Perspective on Airservices ATC Staffing Requirements Methodology

The approach taken by Airservices to determine the Core and Mature ATC Requirements is well documented, structured and logical. Airservices uses an ATC staffing process that has been in place for a number of years and was developed with air traffic control expertise and reputable external consultants. Despite the robust methodology for determining the Core and Mature ATC Requirements, no amount of tactical planning can predict all situations. There have been instances when ATC personnel were unavailable to provide control service and while highly undesirable these events have been infrequent, of relatively short duration and they occurred during light traffic periods.[1]

2.1   Validation of Work Standards/Hours of Coverage Determination

As part of this assessment, NAV CANADA reviewed the documentation outlining the approach taken to determine the Hours of Coverage required for air traffic service workload demands. We found the inherent complexities of Air Traffic Control were properly addressed. The development of the ATC Workload Standards calculation process is thorough and captures the essence of ATC workload activities. The integrity of the process was reinforced by the steps taken to validate the model assumptions with multiple observed work activities over a sample period of time and work times were derived from multiple ATC simulator sessions.

Once the Workload Standards are determined for frequency and duration the resulting workload is calculated in a model that incorporates constraints such as minimum console numbers and maximum shift lengths and calculates the number of base consoles needed. The model identifies the number of open consoles required by time interval across an average week. The thresholds reflect the proportion of time needed for ATC Scan and Plan Activities by console. The thresholds are then combined with ATC executable workload to calculate the total workload demand in 15 minute intervals. While theoretical in nature, this model does provide a logical framework for

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[1] Air Traffic Control services were unavailable on 18 occasions in the last 4 years with aircraft affected on 6 of those occasions – this equates to impacting 65 flights out of about 12 million. Airservices February 2013.

determining the number of consoles to open and when. It is directly linked to air traffic demand and the complexities of air traffic control including coordination, conflict resolution and scanning, planning and execution control activities.

The application of this Workload Standards model, when combined with the independent assessment of Hours of Coverage, results in a quantitative method of determining the Hours of Coverage for each ATC Group/Unit in Airservices Australia which is updated annually. The independent assessment compares the theoretical model results with actual historical data (which may be aircraft movements, or flight minutes, or seat counts, or console hours). Further, consensus is achieved on the Hours of Coverage results through the finalisation and acceptance process. The overall result is an evidence based framework for determining ATC Hours of Coverage that is aligned with current air traffic service demands which incorporates inherent ATC workload complexities.

2.2   Core ATC Requirements Determination Review

The Core ATC Requirements calculation is based primarily on the Work Standards/Hours of Coverage determination and the corresponding Shift Bank generated by the National Rostering Team (NRT). The Shift Banks for each Group/Unit must comply with the ATC Enterprise Agreement and the Fatigue Risk Management System shift creation rules. These shift banks are cross checked by different members of the NRT to ensure complete and accurate compliance. The NRT generates the shifts required per day for a standard week based on the Hours of Coverage.

The Core ATC Requirements per Group/Unit is calculated by multiplying the average number of shifts per day for Core Coverage by the ratio of days per year (365) to specific Group/Unit controller days available per year. The ATC days available per year for Core Coverage account for:

Operational coverage
Breaks from coverage
Refresher Training
Leave Provision including:
      -Recreation leave
      -Long service leave
      -Remote Location leave
      -Familiarization shifts upon return from leave

The ATC days available per year take into account the nature of the work and reflect the corresponding Leave entitlements for each Group/Unit. The appropriate days per year are accrued to reflect the Long Service Leave Entitlement for every ten years of service.

The conversion of average shifts per week/7days in a week multiplied by the ratio of days in the year to ATC days available per year (as per the Enterprise Agreement) is consistent with and similar to the NAV CANADA ATC Staff Requirement determination. The Airservices ATC Core Requirement is equivalent to the NAV CANADA ATC Staff Requirement.

The Airservices Core ATC Staff Requirement calculation forms the base or lower bound staffing number that enables Airservices to fulfil Civil Aviation Safety Regulations (CASR) Part 172 obligations and provide staff with leave consistent with the Enterprise Agreement and the Fatigue Risk Management System.

2.3   Mature ATC Requirements Determination Review

Airservices aims to staff at levels equal to or above the Mature Staffing Requirement number, which is above the Core Requirements to ensure service continuity, as well as support staff development, team activities and Organisational training. With these objectives in mind, a Mature ATC Staff Requirement is determined to account for additional time for Supervisors and operational ATC training support prevalent in the air traffic control environment.

The Mature ATC Requirements per Group/Unit is calculated by multiplying the average number of shifts per day for Core coverage by the ratio of days per year to controller days available per year taking time for Supervisor duties and operational training support activities into account. The Mature ATC Staff Requirement forms the staffing level target for all Airservices Australia Groups/Units and amounts to 118% of the Core ATC Staff Requirements. A comparison of the total Airservices Mature ATC Staff Requirements with the Available ATC staff numbers indicates 101% of air traffic controllers are available to work as per the January 2013 Operational Resource Plan.[2] This indicates Airservices has achieved the overall Mature ATC staffing target (which is set at 18% above the Core ATC Staff Requirement).

2.4   Overview of ATC Staffing Requirements Methodology

The focus of Airservices' ATC Staffing Requirements methodology is on operational service delivery. The process is based on the hours of ATC coverage required to meet service demands. ATC Shift banks are created based on the respective Hours of Coverage while incorporating the Fatigue Risk Management System and respecting the terms of the Enterprise Agreement. The staffing methodology produces a Core to Mature set of ATC Staff Requirement and Supervisor numbers for each Group/Unit which incorporates some flexibility and prioritises operations in a safety first 24-7 essential service environment.

The ATC Staffing Requirements methodology is an effective and strategic approach to cater for sufficient ATC staff and ensure Airservices' operational requirements are met. This methodology is predicated on every ATC having a Fully Proficient Endorsement. However, the complexities of the Endorsements and providing a work-life balance, as per the Enterprise Agreement, create challenges in achieving this.

Even after taking constraints into consideration, as of January 31, 2013, Airservices has achieved an overall ATC availability level of 101% relative to the Mature ATC staffing target (which is 18% above the Core ATC Staff Requirement). Close monitoring of ATC staff availability at the Group/Unit level on a continuous basis is necessary to ensure operational requirements can be

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[2] Source: Airservices Australia ATC Staffing Plan as at January 2013.

met, if transfers are required or new Endorsements assigned. The ATC Resource Plan serves this purpose. Table A-1 and 2 in Appendix A lists all Groups/Units and the Core, Mature ATC staff and Supervisor Requirements numbers corresponding to the ATC staff available at each, on January 31, 2013, as per the Airservices ATC Resource Plan.

The Airservices Australia ATC operational training model is based on a progressive ATC qualification approach. Although this differs from the NAV CANADA approach (full qualification Endorsement is usually required to obtain an ATC license) the progressive qualification approach may shorten time to check-out, can increase success rates and can provide a more overall positive ATC training experience. Although, it also means newly endorsed controllers are limited in where they can work. On the negative side, this progressive qualification approach can present pressures to accelerate progression of the newly endorsed ATC to full Endorsement and result in higher risk of proficiency gaps. It does add complexity and constraints to the roster process and could adversely affect ATC Group engagement. The result can be the number of ATC individuals in a Group/Unit matches the Mature ATC Requirement number but the ATC workload cannot be balanced because some of the ATC are not Fully Proficient with limited deployment capability. The likely impact is increased overtime shifts, shift extensions and related inefficiencies to deliver control service until more Endorsements are achieved by controllers.

All Air Navigation System Providers (ANSPs) are faced with the realities of ATC staff unavailability. As society embraces work-life balance issues, these issues are translated into needs which are increasingly present in ATC Enterprise Agreements worldwide. Consequently, ANSPs as employers must rise to the challenges of accommodating day-to-day planned and unplanned ATC absences from work. Absences can be attributed to part-time work arrangements, Caring, Parental, Bereavement, Illness, Recreation, Fatigue Management, Long Time Service, Time Off in Lieu of overtime and many other reasons. The accommodation of work-life balance needs increases the complexity of managing and planning ATC staffing, with a backdrop of ongoing air traffic demands, combined with changes to airspace, procedures and technology.

At Airservices the large number of unique ATC Endorsements has constrained the ability to deploy Fully Proficient ATC staff otherwise available (able to work). The Endorsement specifies where the specific set of ATC skills may be applied, constraints at the console level create workload supply imbalances and in turn, over and understaffing situations within a Group/Unit may occur. ATC staff deployment is limited considerably due to the current Endorsement framework. In response to this situation, Airservices has undertaken the ATC Endorsement Reform program to alleviate the constraints imposed on the operation by targeting a reduction in the number of unique ATC Endorsements from 253 to 49 Service Delivery Line/Units plus 7 Generic Endorsements in phased approach.[3]

It is evident Airservices is proactively dealing with accommodating work-life balance needs based on the implementation of a sophisticated shift scheduling tool acquired from Quintiq. Grey shifts in Quintiq, indicate an ATC person is on standby ready and able to be called into work, as required. Airservices has created a tactical tool via Grey shifts to effectively manage ad hoc ATC absences, avoiding some overtime costs. Arguably, overtime can and should be used as a tactical tool for meeting surges in workload demand or temporary shortages in ATC staff. Shift extensions and

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[3] Endorsement Reform program, Airservices February 2013.

backfill overtime can be cost effective because there are no incremental costs for Endorsement training, overhead and other related costs in the overtime rate.

The National Roster Team is able to accommodate progressive ATC Endorsements within a Group/Unit, different shift start and stop times aligned with traffic volumes, part time employees, and all of the known planned leave types. Leveraging existing and potential Quintiq functionality could be worthwhile to continue to improve ATC staffing flexibility. It may be possible to explore roster access for ATC staff from their personal electronic devices, or to minimise weekends or midnights worked through Quintiq's "what if" or optimisation features. Enabling ATC Groups/Units to incorporate preferences based on their input would contribute positively to engagement and labour relations.

Ready access to actual leave information such as: leave type, duration, start and stop times and dates by Group/Unit can transform what may appear to be ad hoc day-to-day occurrences into predictable patterns which can improve rosters and ATC resource utilisation. This information could support Safety Risk Management, Collective Bargaining and increase efficiencies, for example, by scheduling meetings requiring ATC staff attendance during lighter traffic periods or when there is a surplus of staff.

The Mature ATC Staff Requirement numbers for each Group/Unit cannot account for every possible situation that could arise in the dynamic air traffic control environment of Australia. The Airservices ATC staffing model and objective (to staff at or above Mature ATC Requirement numbers) provides a reliable framework for strategic and predictable operational ATC staff planning.

A tactical more responsive ATC staffing approach which supports having "suitably qualified ATC staff in the right location at the right time" requires several planning support tools and processes to be in place. These tools include a sophisticated roster system, a positive labour relations environment, a strong front line management team, flexible ATC Endorsements, and ready access to ATC planned and actual resource utilisation information. There are a number of planning tools and processes that have been implemented by Airservices or are underway and others which could be considered to further improve and support the tactical ATC staffing process.

Section 3.0 of this report covers an assessment of the ATC Resource Plan looking specifically at project resource planning and the demand for staff with the ATC skill set as well as a review of the organisational demand over the next 5 years.

3.0   Current Year ATC Resource Plan Overview and Assessment

The current ATC Resource Plan includes all operational Groups/Units in Airservices and indicates ATC staff and Supervisors available by month. It is used to track and monitor the movements of all ATC staff throughout Airservices Australia and provides the Core and Mature Requirement for each Group/Unit. The status of all ATC staff whether Part Time or Full Time is also indicated in the Plan. ATC staff information is submitted to the Resource Plan on a daily basis and reported on an end of month basis (e.g. Human Resources and/or Line Managers provide information on ATC transfers in and out of units). Coordination and collaboration with operational units takes place bi-weekly and semi-annually via people planning conferences. The ATC Resource Plan time horizon focuses on

the next 24 months, with a less certain forecasting capability over 5 years in total. ATC movements, resignations and retirements are all part of the Resource Plan. The model is used to assist Airservices Management and the Learning Academy to consult and plan for the provision of approximately 80 ATC Endorsements per year, over 5 years.

Currently, maintaining and updating the ATC Resource Plan is a manually intensive process, consuming considerable time and effort. It requires information from multiple sources to be entered and validated in order to maintain accuracy and currency. The Resource Planning process can be improved by automating and improving functionality. In addition, there is no apparent link to other departments in the Airservices organisation that may require staff/resources with the ATC skill set. It is recommended that Projects and Engineering, Safety Assurance, and other stakeholders be required to formally identify their ATC resource requirements on a monthly basis through the ATC Resource Plan. This would add considerable planning value by enabling prioritisation of releasing ATC personnel; and enhance cross-functional communications and coordination. Understanding operational constraints and limitations will drive better utilisation and plans for ATC resources. Projects and initiatives relying on access to ATC personnel will have plans and agendas aligned with achievable timelines for successful project delivery. It may be worthwhile to extend this requirement and practice to key external stakeholders to submit their requests formally and at regular intervals.

The more predictable the demand for ATC staff and the more complete and timely the information on ATC availability, the higher the assurance the demand will be met. This can be achieved at the front end through identifying and including all organisations within Airservices in the 5 year ATC Resource Plan. Predictability can also be enhanced through comprehensive ATC resource utilisation data and analytics, monitoring and reporting to identify evidence based patterns and trends. Focus on the communication of the cost and value of releasing the ATC skill set will lead to improvements in ATC staff deployment and clearer understanding of the Airservices Australia service delivery drivers.

4.0 ATC Staffing Review Findings and Summary of Recommendations

The Airservices Australia methodology for determining the Core and Mature Requirements for ATC staff and operational ATC Supervisors is logical and highly correlated with ATC workload complexity and air traffic demand. The overall ATC staff level is equal to or above the Mature ATC Requirement number (which is 18% higher than the Core). Airservices exceeds the overall Mature ATC staffing level target with 101% availability relative to Mature, based on the January 2013 Operational Resource Plan. As such, Airservices has a solid framework for the strategic planning of ATC staff with an operational focus for delivering safe, efficient, and effective air traffic control services 24 hours a day, 7 days a week.

The challenge for tactical day-to-day ATC staff planning and availability assurance involves much more than identifying a target level of ATC staffing. ANSPs worldwide must accommodate work-life balance needs articulated in Enterprise Agreements. The management of ATC staff availability in an environment of change to ensure "the right people in the right place at the right time" requires

a number of solid programs and processes to be in place. NAV CANADA recommends these include a sophisticated and agile roster system, continued focus on delivery of ATC Endorsement Reforms, very positive labour relations, review of ATC Supervisor Roles and Responsibilities, ready access to ATC resource utilisation data and analytics, enhancements to Quintiq and an automated ATC Resource Plan formally integrated across the Airservices organisation.

Appendix A

Table A-1 – ATC Available, Core and Mature Requirements

as at 31-Jan-13			
ATC UNITS	**Available**	**Core**	**Mature**
04.05 SY TWR	31.7	29.5	34.7
02.07 ML TMA (ECSS-APP (ML)	29.0	26.4	29.6
03.02 BN TMA	29.0	24.9	27.9
02.09 ML TWR	23.6	20.9	24.5
03.04 BN TWR	21.5	20.7	24.3
02.20 ECSS West (Bass)	27.4	20.1	24.0
04.03 SY TMA APP	22.5	20.8	23.6
07.03 West P (UAS West)	25.6	19.5	23.2
07.07 Tops East-Central	21.7	18.6	22.2
05.02 West Radar (RS South West)	21.1	18.6	22.1
07.02 Bight (UAS Central)	23.9	18.4	21.9
05.04 Bass Low	20.1	18.2	21.6
04.07 BK/CN TWR	18.5	18.9	21.4
04.02 SY TMA DEPT	21.8	18.4	20.9
03.12 Fraser	21.6	17.3	20.7
06.04 PH TWR	20.0	17.1	20.2
02.16 ECSS East (Canberra)	20.6	16.0	19.1
03.08 Kingsford East (Macquarie)	21.5	15.9	18.9
06.02 PH TMA	17.7	16.4	18.5
03.09 Kingsford West (Hunter)	21.8	15.2	18.2
02.02 AD TMA	17.6	16.0	18.1
07.06 Outback	19.5	15.1	17.9
03.17 CS TWR	15.6	13.6	15.9
03.13 Reef	16.7	13.0	15.8
02.04 AD TWR	18.0	13.3	15.6
02.19 ECSS West (Barossa)	17.0	12.5	15.0
06.06 JT TWR	15.0	12.2	14.1
03.10 Byron	17.0	11.6	13.9
07.14 Tops West	14.0	11.7	13.9
05.17 New England	14.0	11.4	13.8
03.15 CS TMA	13.6	11.8	13.5
03.06 CG TWR	10.0	11.4	13.3
05.05 Central Low (RS South East)	11.3	10.9	13.3
07.05 UAS East	13.5	10.9	13.3
02.17 ECSS East (Central)	10.5	11.1	13.2
02.14 CB TWR	12.0	10.5	12.5
02.06 PF TWR	11.0	10.5	12.2
02.12 MB TWR	13.0	10.0	11.7
02.11 EN TWR	8.0	8.1	9.4
03.07 AF TWR	10.0	7.2	8.4
02.22 ML SS	7.5	6.9	7.5
03.19 BN SS	6.0	6.9	7.5
02.15 ECSS East (CB TMA)	7.0	6.6	7.4
05.08 TW TWR	7.6	6.3	7.2
05.11 HB TWR	6.5	5.6	6.4
05.21 BR TWR	8.0	5.5	6.3
05.16 SU TWR	5.0	5.3	6.0
05.13 MK TWR	7.0	5.2	5.9
05.15 RK TWR	6.2	5.1	5.9
05.22 KA TWR	5.0	4.7	5.3
05.09 AY TWR	4.5	4.5	5.2
05.12 LT TWR	5.5	4.2	4.9
05.10 AS TWR	4.0	3.7	4.3
02.13 AV TWR	3.3	3.2	3.8
05.07 CH TWR	3.5	3.2	3.8
05.14 HM TWR	2.0	2.1	2.3
Grand Total	**826.3**	**703.6**	**822.0**
Available vs. Mature = 101%			

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Table A-2 – Supervisor Available, Core and Mature Requirements

as at 31-Jan-13			
SUPERVISOR UNITS	**Available**	**Core**	**Mature**
14.03 ML SM 1	7.8	6.0	6.7
14.09 BN SM 2	6.0	5.7	6.4
14.05 ML SM 3	6.0	4.9	5.6
14.18 SY TMA SM	10.0	5.0	5.6
14.17 SY TWR SM	4.0	4.3	4.6
14.10 BN SM 3	6.0	3.1	3.6
14.02 ML ORM	4.8	3.0	3.5
14.04 ML SM 2	4.6	3.0	3.5
14.07 BN ORM	3.0	3.0	3.5
14.06 BN TWR SM	3.0	2.8	3.3
14.08 BN SM 1	7.0	2.6	3.1
14.01 ML TWR SM	3.0	2.5	2.9
14.16 AD TMA SM	3.0	2.4	2.6
14.12 CS TMA SM	1.0	1.9	2.3
14.13 PH TWR SM	3.0	2.0	2.3
14.14 PH TMA SM	3.0	2.0	2.3
14.15 AD TWR SM	2.0	2.0	2.2
14.19 CG TWR SM	1.0	1.3	1.7
14.11 CS TWR SM	3.0	1.1	1.4
Grand Total	**81.1**	**58.6**	**67.1**