Australian Government
Civil Aviation Safety Authority

SURVEY REPORT

SID & STAR experience in Australia & New Zealand

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April 2026

Acknowledgement of Country

The Civil Aviation Safety Authority (CASA) respectfully acknowledges the Traditional Custodians of the lands on which our offices are located and their continuing connection to land, water and community, and pays respect to Elders past, present and emerging.

Artwork: James Baban.

Overview

This report presents an analysis of the questions and responses to a survey on Standard Instrument Departure (SID) and Standard Terminal Arrival (STAR) procedures. The survey period ran from 3 June 2025 to 30 June 2025.

The data was collected from various stakeholders, including pilots and air traffic controllers, to identify areas of misunderstanding, procedural challenges, and opportunities for improvement.

The findings highlight the need for simplified phraseology, more standardised procedures, and enhanced training to improve the efficiency and safety of SID/STAR operations.

CASA would like to thank all respondents for their input.

Contents

1 Reference material

1.1 Acronyms

The acronyms and abbreviations used in this report are listed in the table below.

Table 1: Acronyms

Acronym	Description
ATC	air traffic control
ATM	air traffic management
CASA	Civil Aviation Safety Authority
EFB	electronic flight bag
FIR	flight information region
FMS	flight management system
ICAO	International Civil Aviation Organization
PANS OPS	Procedures for Air Navigation Services - Aircraft Operations (ICAO Doc 8168) Volume II
SAR	search and rescue
SID	Standard Instrument Departure
STAR	Standard Instrument Arrival
VNAV	vertical navigation

1.2 Definitions

Terms that have specific meaning within this report are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this report and the civil aviation legislation, the definition in the legislation prevails.

Table 2: Definitions

Term	Definition
Standard instrument arrival (STAR)	A designated instrument flight rule (IFR) arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced.
Standard instrument departure (SID)	A designated instrument flight rule (IFR) departure route linking the aerodrome or a specified runway of the aerodrome with a specified significant point, normally on a designated ATS route, at which the en-route phase of a flight commences.

2 Introduction

Standard Instrument Departures (SIDs) and Standard Instrument Arrivals (STARs) are critical components of air traffic management, designed to streamline the flow of aircraft in and out of airports. However, the complexity and variability of these procedures can lead to misunderstandings and inefficiencies. This report analyses the feedback from pilots and air traffic controllers to identify common issues and propose recommendations for improvement.

2.1 Methodology

The data for this report was collected from an online survey hosted by the Civil Aviation Safety Authority (CASA) of Australia. The survey was based on similar surveys conducted in France, the United Arab Emirates and Thailand. The target audience was stakeholders in Australia and New Zealand, but the survey was open for comment from anywhere.

The survey period ran from 3 June 2025 to 30 June 2025.

There were a total of 624 responses, with respondents noting the following home regions:

- Australia - 587
- New Zealand - 27
- Hong Kong - 2
- Africa - 1
- Brazil - 1
- Taiwan - 1
- Zambia - 1.

Responses were received mostly from pilots, but also from air traffic controllers and other aviation related functions. Appendix A includes a detailed breakdown of the demographics.

The responses were analysed to identify common themes and issues. The findings were then categorised into several themes, including phraseology, procedure design, and training.

3 Key feedback – themes

Theme 1 - Familiarity and confidence

- **Familiarity:** Most respondents reported being 'Very familiar' or 'Somewhat familiar' with SID/STAR phraseology.
- **Confidence:** A majority expressed confidence in issuing or receiving instructions for SID/STAR constraints, with 'Very confident' being the most common response.

Theme 2 - Common Areas of Misunderstanding

- **Level clearances:** Frequently cited as a source of confusion or extra workload, especially when they are issued near the transition level or transition altitude.
- **Speed restrictions:** Issues arise with cancellation below 10,000 feet and ambiguity in speed control instructions.
- **International differences:** Variations in procedures between regions (for example, Australia vs. the United States) lead to misunderstandings.

Theme 3 - Phraseology

Many respondents highlighted the need for simplified and standardised phraseology. The current phraseology is often seen as overly complex and confusing, leading to misunderstandings and increased workload for both pilots and air traffic controllers.

- **Radiotelephony congestion:** Repeated use of the phrases 'Descend via STAR' and 'Climb via SID' were generally perceived as redundant and contributory to radiotelephony congestion.
- **Simplified phraseology:** Respondents suggested that the phraseology should be simplified to reduce the number of words and make it easier to understand. For example, the phrase 'descend via STAR' could be replaced with a simpler instruction that still conveys the same information.
- **Standardised phraseology:** There is a need for more standardisation across different regions and countries. This would help reduce confusion and ensure that all stakeholders are on the same page.

Theme 4 - Procedure design

The design of SID/STAR procedures was another common theme. Many respondents felt that the current SID/STAR designs in Australia are often complex, inefficient and not accounting for the performance capabilities of modern aircraft.

- **ATC-induced constraints**: Descent constraints imposed by ATC disrupting VNAV profiles, increasing pilot workload.
- **Waypoint constraints:** The survey identified a significant number of waypoints and procedures considered by respondents as requiring modification or adjustment. A frequent response was that a particular procedure or waypoint constraint caused an inefficient flight profile (for example, excessive amount of level flight) or excess workload (for example, differing constraints coming into effect in quick succession). Appendix B lists a selection of waypoints with specifically identified issues.
- **Naming conventions:** Unfamiliar waypoint names delivered rapidly cause confusion.
- **Simplified procedures:** Respondents suggested that SID/STAR procedures should be simplified to reduce the number of waypoints and altitude constraints. This would make the procedures easier to follow and reduce the workload for pilots.
- **Performance-based design:** The design of SID/STAR procedures should better account for the performance capabilities of modern aircraft. This would help ensure that the procedures are efficient and do not require unnecessary level-offs or speed changes.
- **Design for containment:** Several respondents described procedures that were not designed to automatically ensure an aircraft remains in controlled airspace. As a result, there was increased radiotelephony load through ATC assigning levels solely to enable aircraft to remain above controlled airspace lower limits.

Theme 5 - Training

Enhanced training for both pilots and air traffic controllers was also identified as a key area for improvement. Many respondents felt that the current training programs do not adequately prepare them for the complexities of SID/STAR procedures.

- **Enhanced training programs:** Respondents suggested that training programs should be enhanced to provide more realistic simulations and scenarios. This would help pilots and air traffic controllers better understand and manage the complexities of SID/STAR procedures.
- **Regular refresher training:** Regular refresher training should be provided to ensure that pilots and air traffic controllers stay up-to-date with the SID/STAR procedures and best practices.

4 Detailed analysis

A detailed analysis of the survey results is provided at Appendix A.

5 Conclusion

The survey responses provide valuable insights into the challenges and opportunities associated with SID/STAR operations.

The analysis of the questions and responses highlights several key areas for improvement. Simplified and standardised phraseology, performance-based procedure design and enhanced training programs are essential to improving the efficiency and safety of SID/STAR operations.

SID/STAR operations in Australia are conducted in accordance with ICAO standards. The results of this survey provide useful evidence for making the case for change to those ICAO standards.

CASA would like to thank all respondents for their input.

6 Recommendations

a. **Procedure redesign:** Optimise waypoint constraints, design for containment within controlled airspace and reduce/avoid lengthy level flight segments.

b. **Phraseology simplification:** Adopt concise and universally understood terms.

c. **Standardisation:** ICAO should reinforce its efforts to encourage member states to harmonise SID/STAR procedures globally.

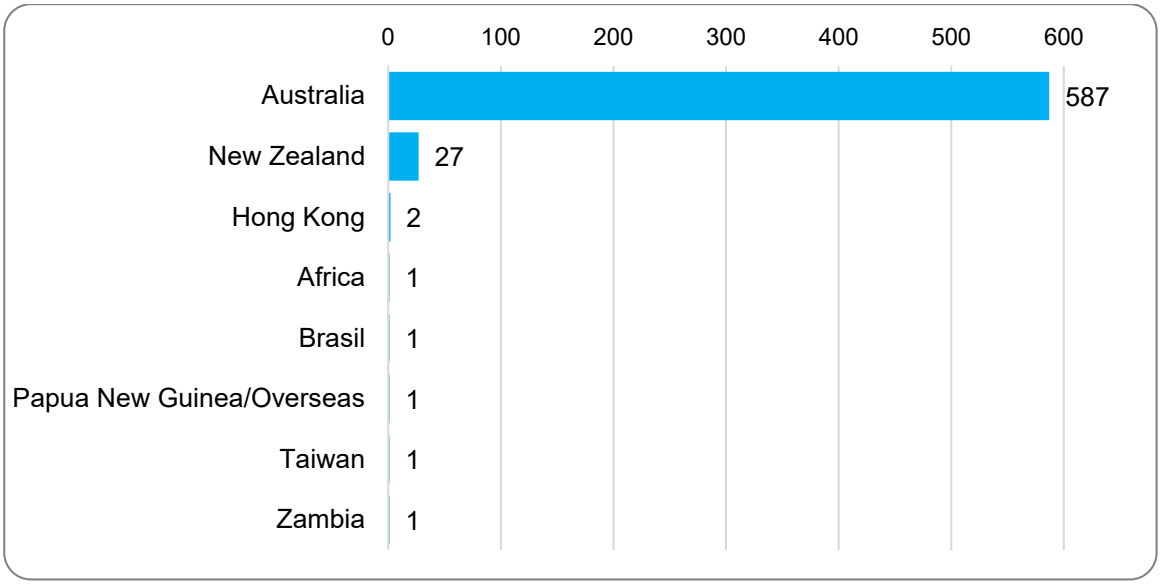
Appendices

- **Appendix A:** Detailed Response Analysis
- **Appendix B:** Waypoints with specifically identified issues.

Appendix A
Detailed response analysis

1. **Please select your home region.**

There were 619 responses to this part of the question, with home regions as shown in the graph below:



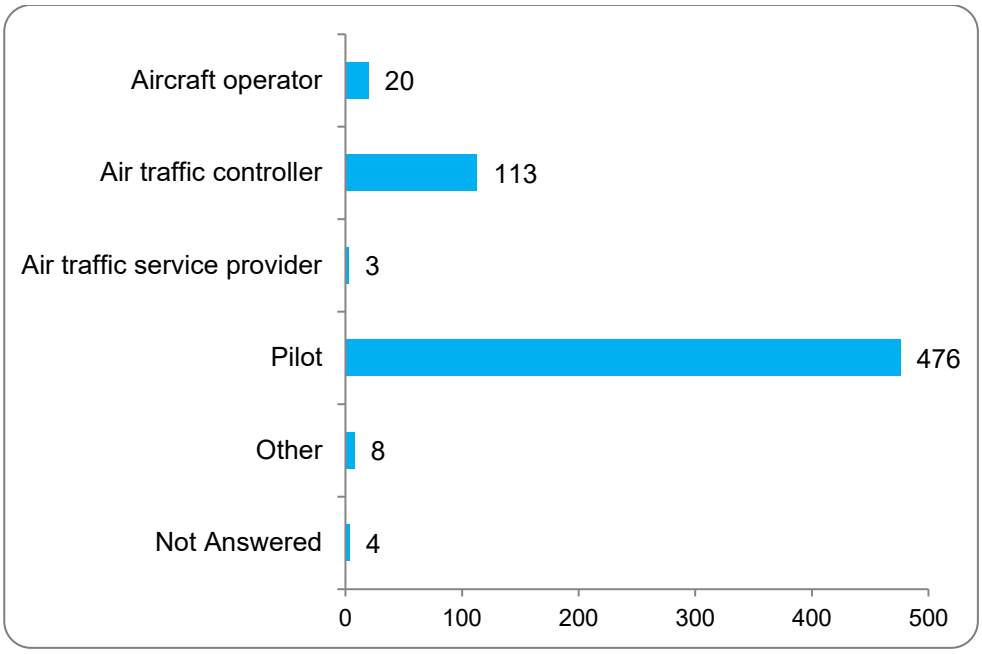
2. **Please enter your postcode. (Optional)**

There were 227 responses to this part of the question.

The postcode does not reveal any specific trend or pattern.

3. **Which of the following best describes you?**

There were 620 responses to this part of the question.

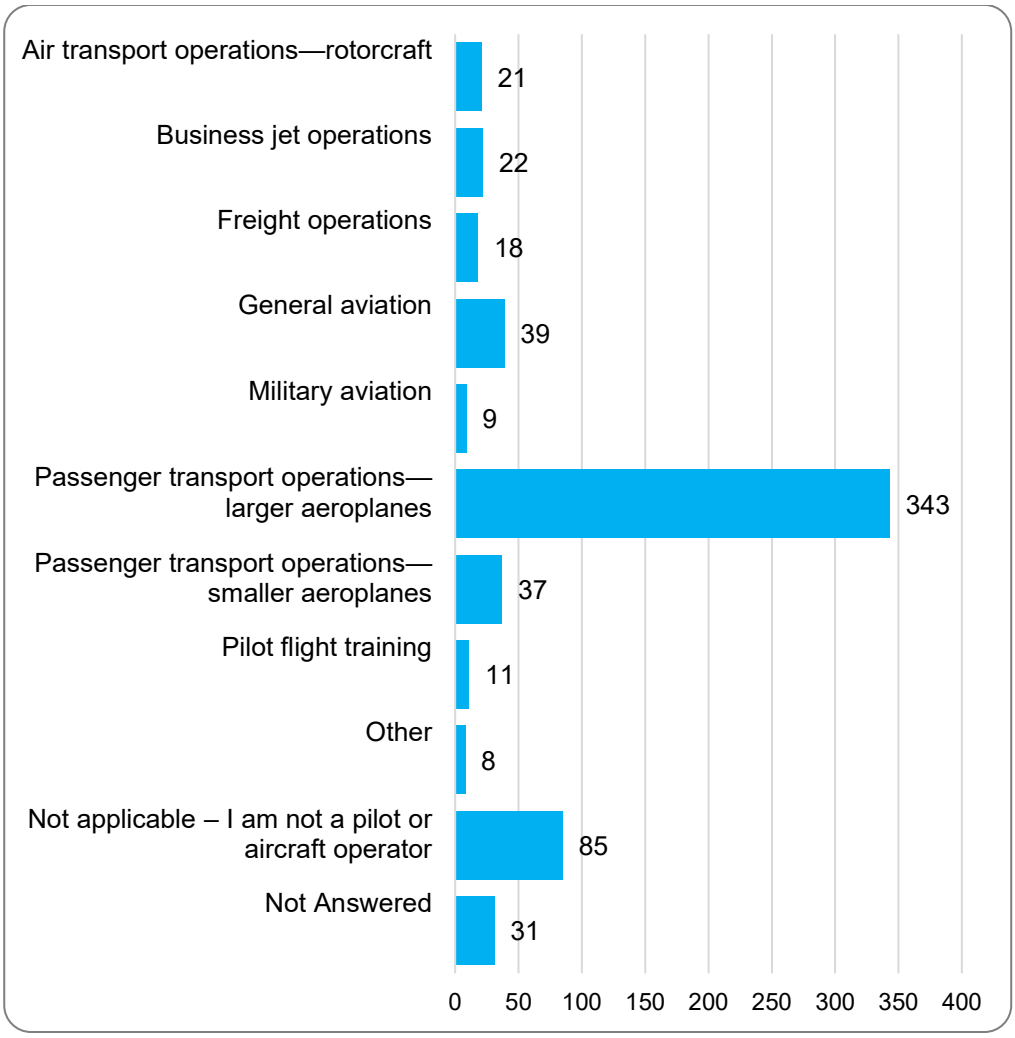


Please specify 'Other' if selected

There were 9 responses to this part of the question, including ATM expert and controller, 424 coder, retired airline transport pilot, air traffic controller and pilot, operation manager, and retired air traffic controller.

4. **If you are a pilot or aircraft operator, which of the following best describes the type of operation that you are involved in?**

There were 593 responses to this part of the question, with a breakdown as shown in the graph below:

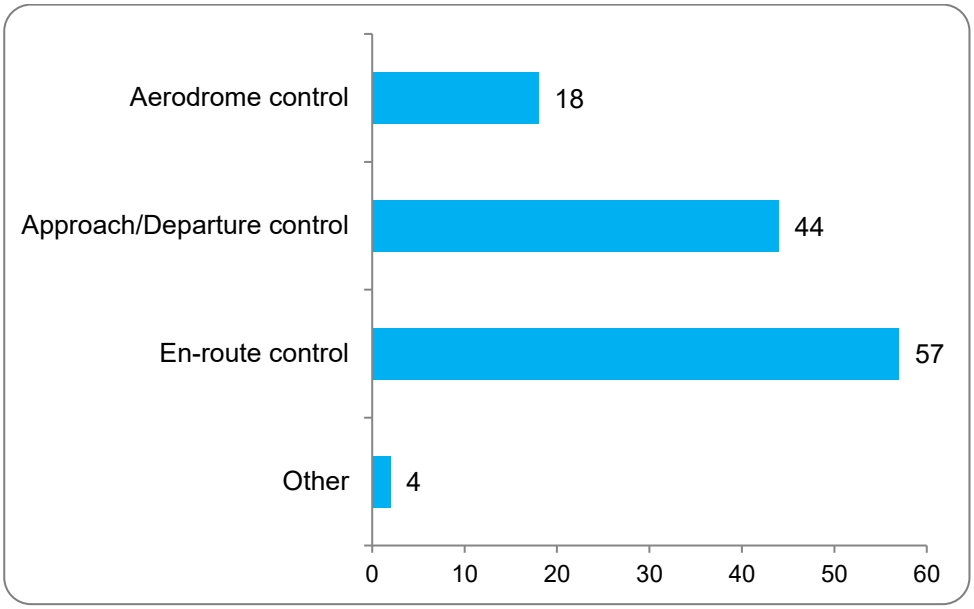


Please specify 'Other' if selected

There were 12 responses to this part of the question which included: passenger transport B737/A320 up to B744/A380 and everything in between, air transport operations and an SA226 freighter, aeromedical pilot, medical/rescue, former B777 captain worldwide, air transport – rotorcraft and all weather search and rescue (SAR), aeromedical, SAR jet operations, aerial work, fixed-wing aeromedical ops, SAR, passenger transport operations - larger aeroplanes and freight operations.

5. **If you are an air traffic controller or air traffic service provider, which of the following best describes the service you are involved in?**

There were 122 responses to this part of the question.

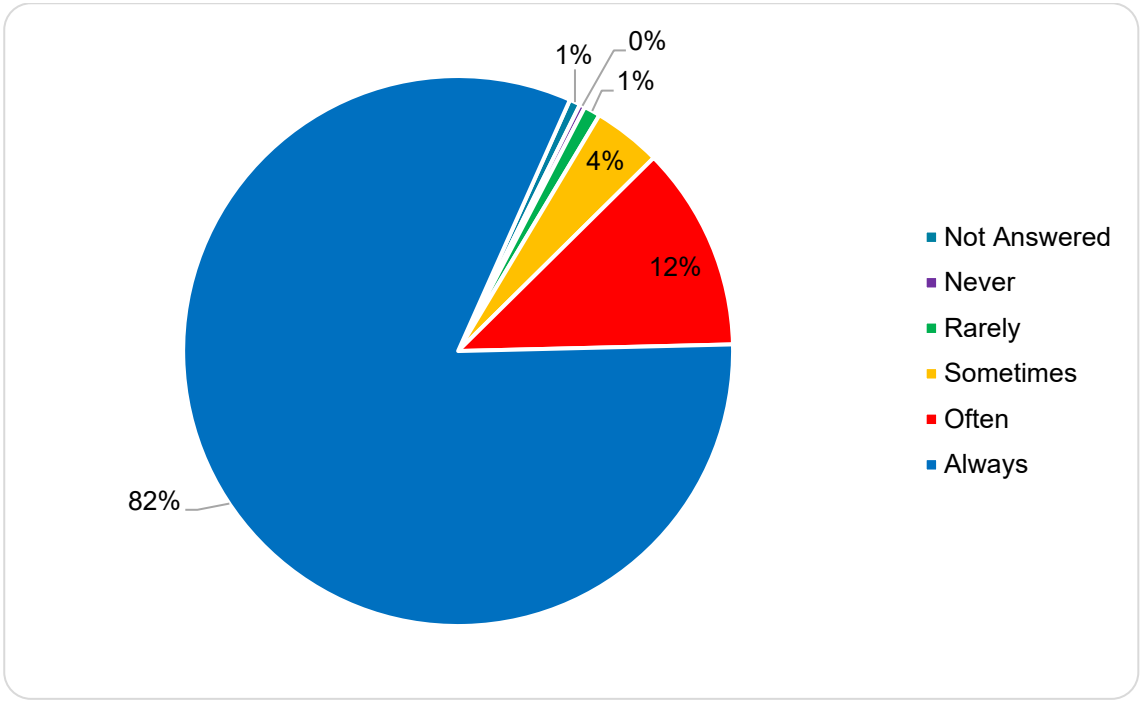


Please specify 'Other' if selected

There were 4 responses to this part of the question, including 'flight data coordinator', 'arrivals [controller]', 'procedural aerodrome and approach control', 'aerodrome control, approach/departure control, en-route control and PANS OPS'.

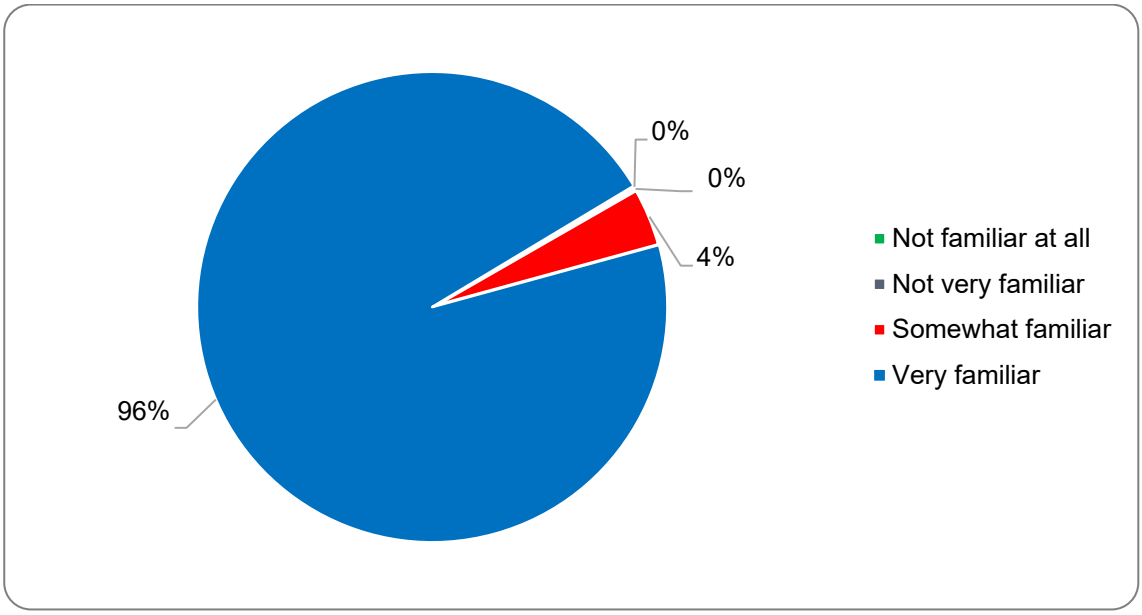
6. **How frequently do you use SID/STAR phraseology in your daily operations?**

There were 620 responses to this part of the question.



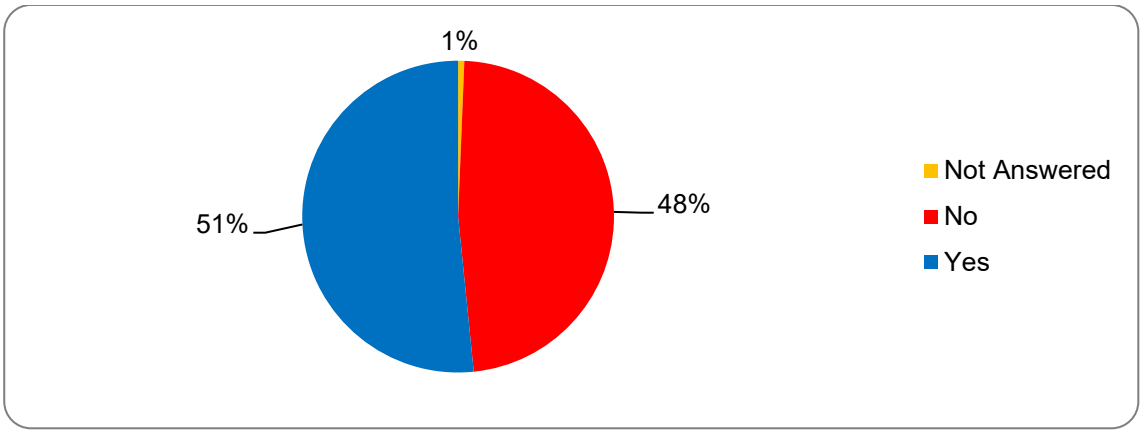
7. **How familiar are you with SID/STAR phraseology*?**

There were 620 responses to this part of the question.



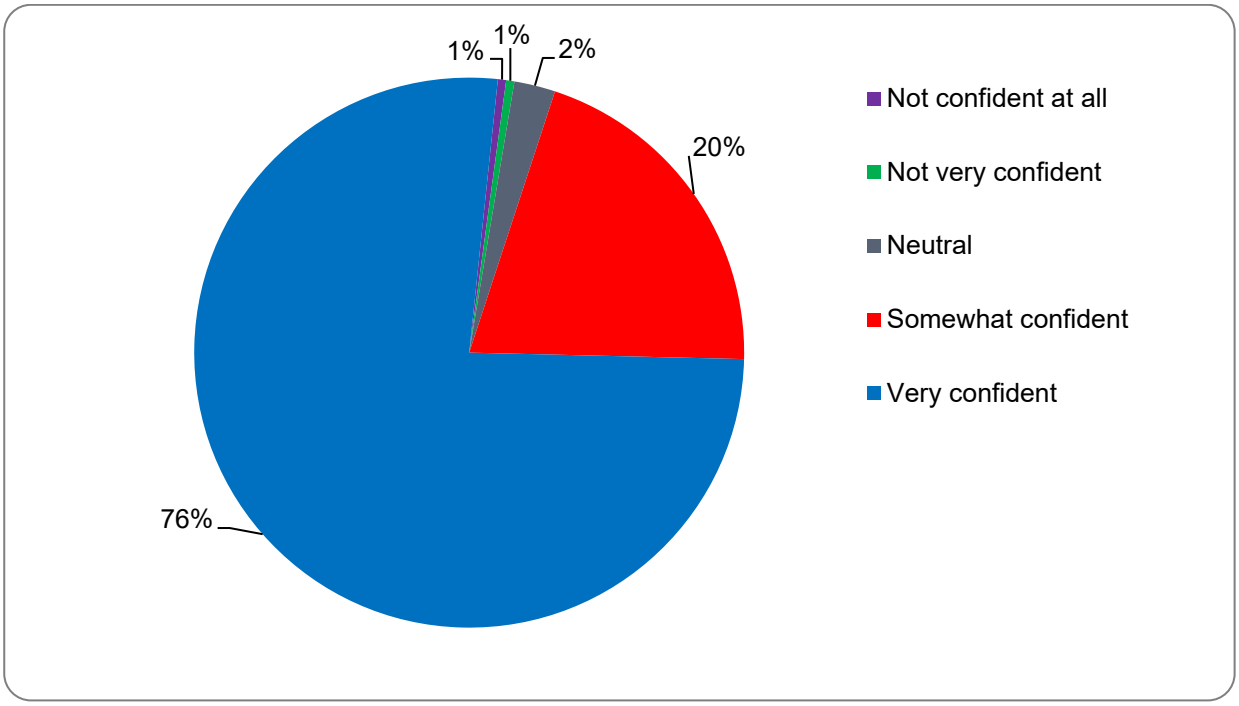
8. **Have you received specific training on how to use standard phraseology with SID/STAR chart constraints?**

There were 620 responses to this part of the question.



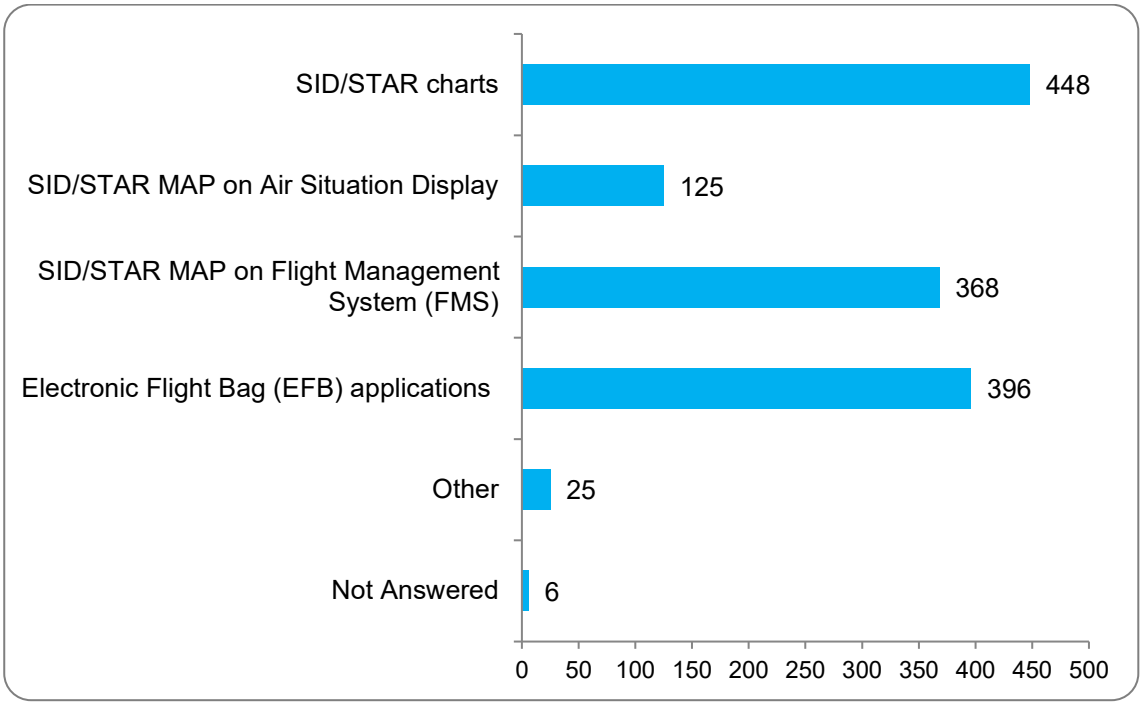
9. **How confident are you in issuing or receiving instruction for each specific constraint (e.g., altitude, speed) on a SID/STAR chart?**

There were 620 responses to this part of the question.



10. **What resources or tools do you use to cross-check SID/STAR chart constraints when issuing or receiving clearances? (Select all that apply)**

There were 618 responses to this part of the question.



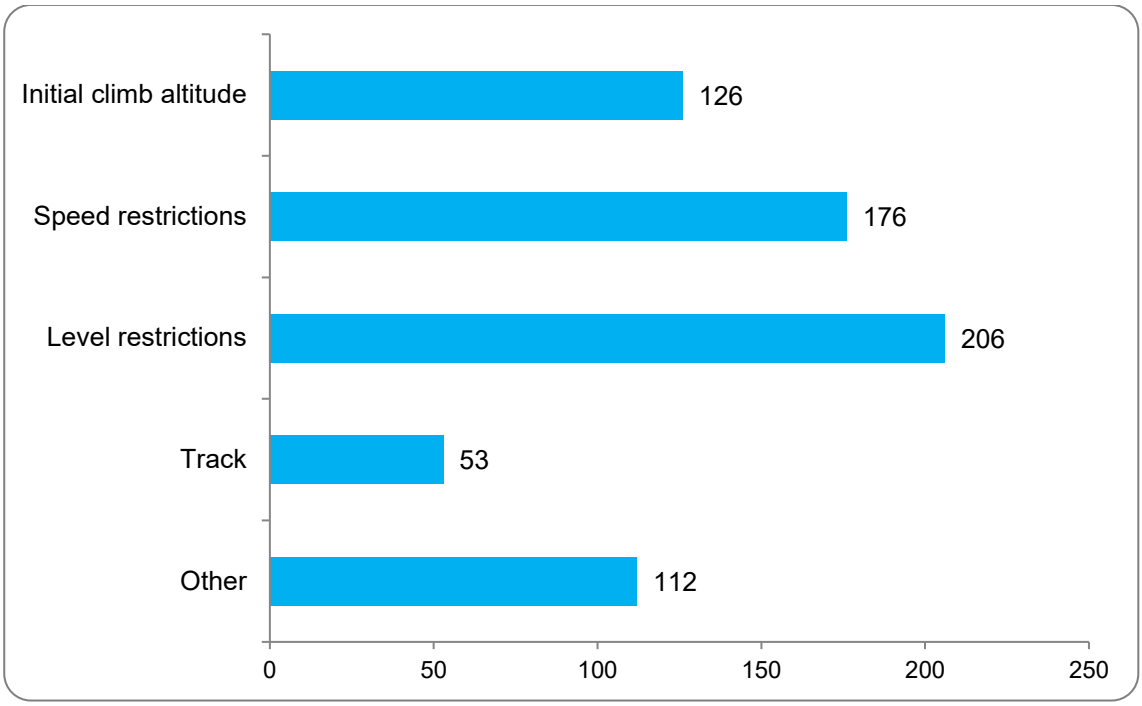
Please specify 'Other' if selected

There were 28 responses to this part of the question, including:

- quick reference sheets
- aircraft flight management system
- ATM system flight data route display
- the SID/STAR charts accessed via the EFB
- memorised knowledge of particular SIDs and STARs
- mental calculations
- ensuring a STAR is read back correctly by pilots
- ATC console guide
- cross checking in multi crew operations
- vertical situation display.

11. **When issuing or receiving a SID clearance, which constraints do you most frequently need to clarify? (Select all that apply)**

There were 507 responses to this part of the question.



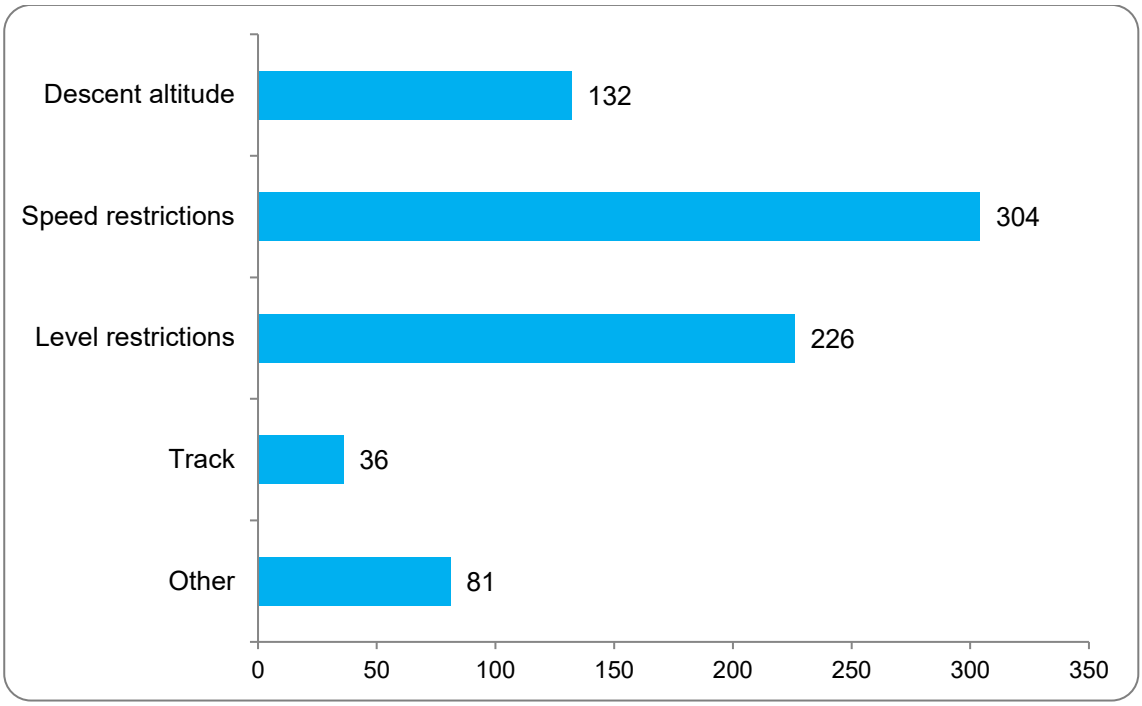
Please specify 'Other' if selected

There were 115 responses to this part of the question, with key points as follows:

- **Common misunderstandings:** Many respondents mentioned that misunderstandings often occur due to unfamiliar naming conventions, being taken off and rejoining, and the use of redundant phraseology like 'climb via' and 'descend via'.
- **Specific issues:** Some specific issues include poor ATC application of standard arrival routes, early speed restrictions, and the complexity of constraints when descent clearance is delayed.
- **International differences:** There are notable differences in procedures and phraseology around the world, which can lead to misunderstandings, especially for international operators.
- **Pilot and ATC perspectives:** Both pilots and ATC have their own perspectives on the issues. For example, pilots find the constant frequency congestion with climb via SID or descend via STAR infuriating, while ATC may not always realise the implications of track shortening on STARs.
- **Rare misunderstandings:** Some respondents mentioned that misunderstandings are rare or that chart briefings cover constraints adequately.

12. **When issuing or receiving a STAR clearance, which constraints do you most frequently need to confirm? (Select all that apply)**

There were 543 responses to this part of the question.



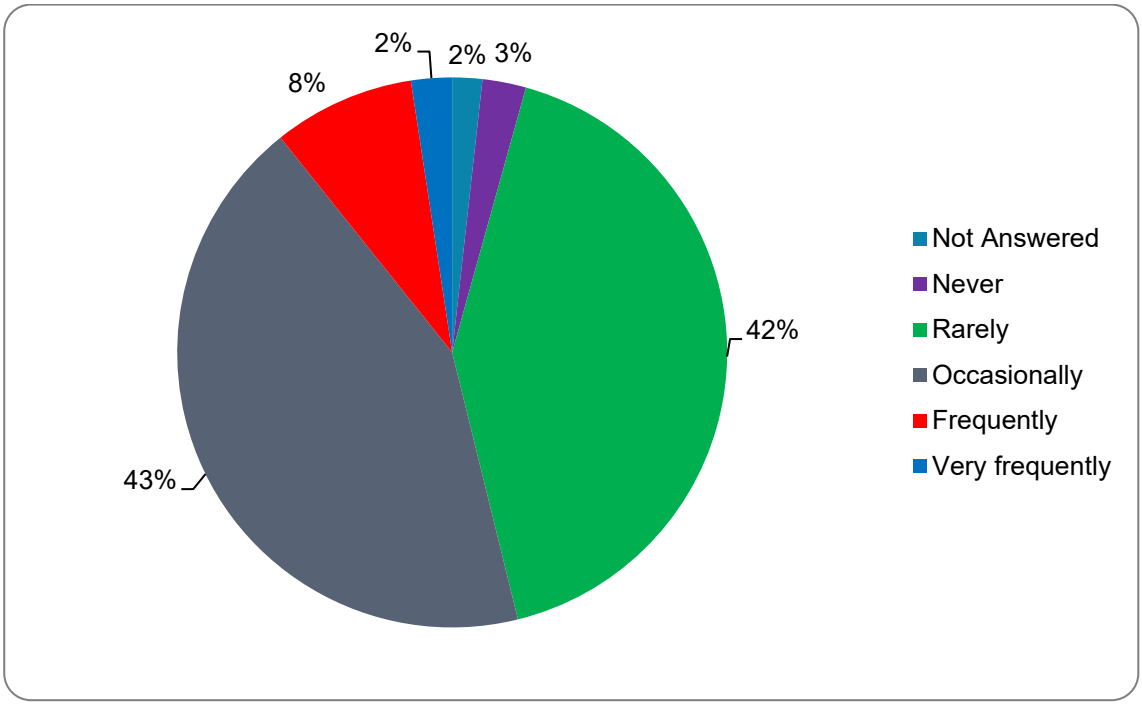
Please specify 'Other' if selected

There were 89 responses to this part of the question, with key points as follows:

- Many respondents indicated that they rarely need to confirm anything, as STAR clearances are generally self-explanatory.
- Some respondents mentioned the need to clarify specific constraints such as speed requirements below 10,000 feet, waypoint pronunciation, and crossing times.
- A few respondents highlighted issues with STAR clearances when operating in specific regions, such as the Indonesian flight information region (FIR).
- There were also mentions of the need to clarify constraints when operating in single-engine aircraft over water, and when speed control is applied by ATC.

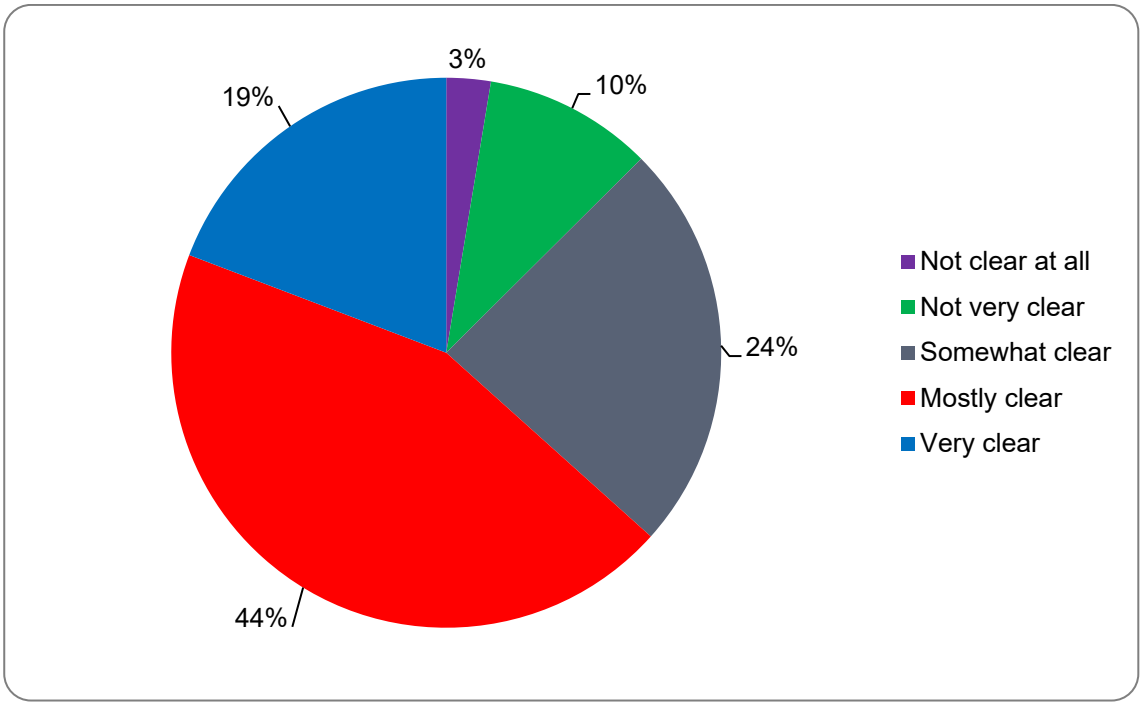
13. **How often do you find that misunderstanding occurs between a pilot and ATC regarding SID/STAR constraints (level, speed) using standard phraseology?**

There were 613 responses to this part of the question.



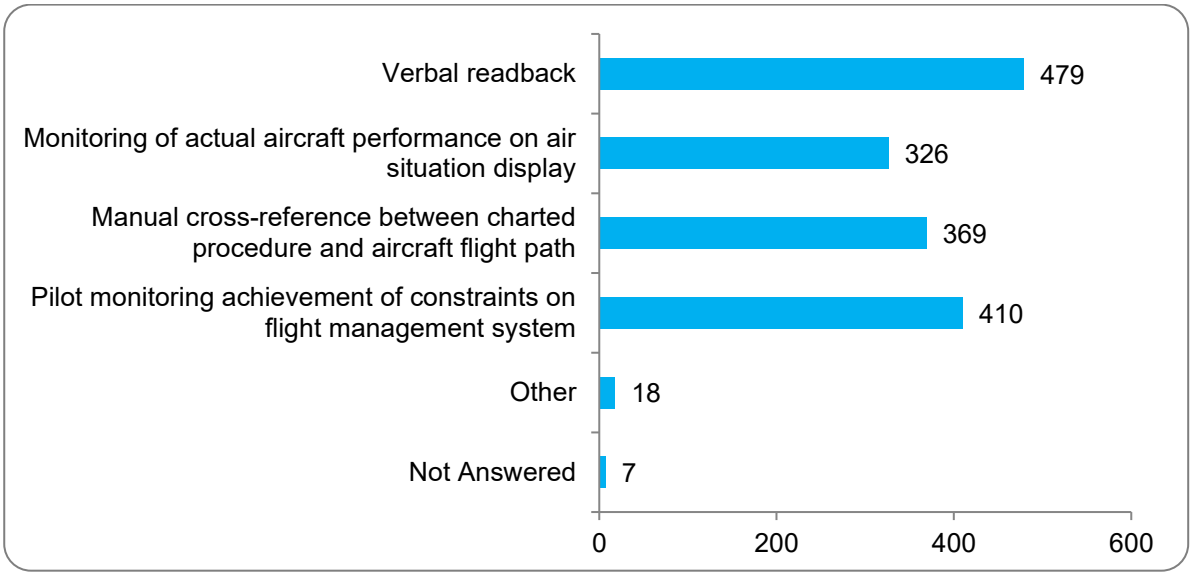
14. **How clearly do you find that SID/STAR phraseology conveys specific chart constraints?**

There were 614 responses to this part of the question.



15. **How do you verify correct application of issued SID/STAR level or speed constraints? (Select all that apply)**

There were 617 responses to this part of the question.



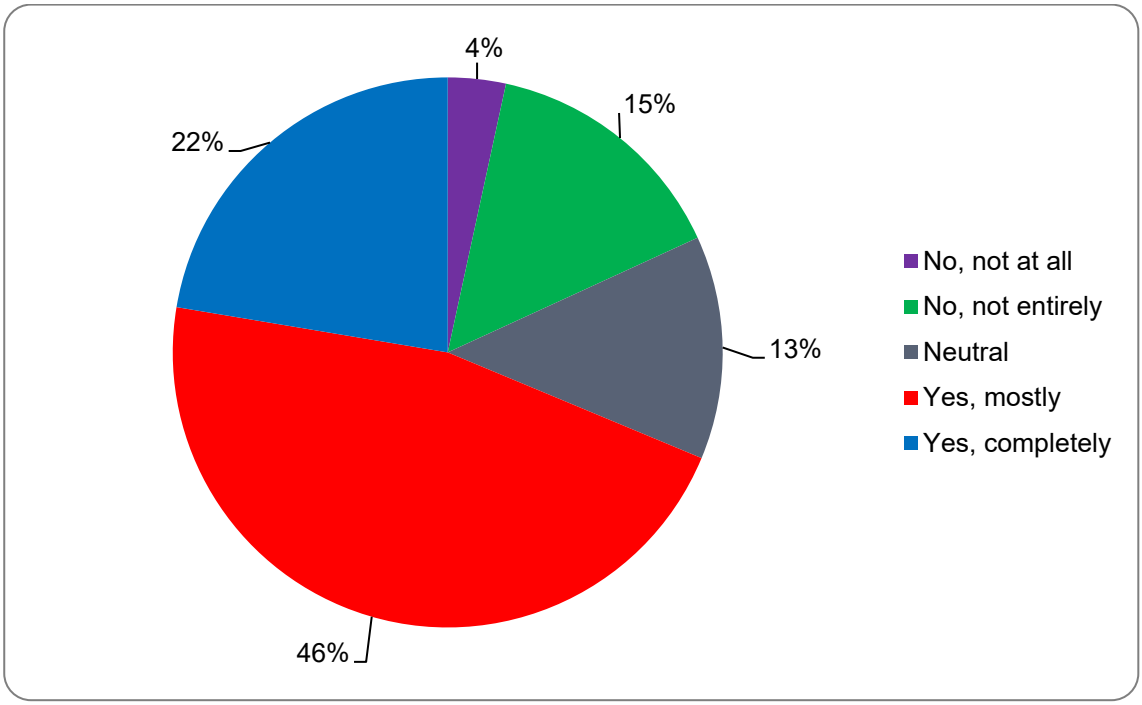
Please specify 'Other' if selected

There were 20 responses to this part of the question, including:

- referencing charts and databases to State source data
- multi-crew communication/verification/monitoring
- initial readback, clarification if needed, cross-checking FMS and Instruments, confirming with FO
- cross check FMS with charts/EFB prior to flying SID/STAR
- chart/ plate
- predicted level monitoring alerts
- cleared level adherence monitoring/cleared flight level (CLAM/CFL) alert
- radio phraseology i.e. using 'via SID/STAR' plays no part whatsoever in increasing level or speed constraint awareness
- use of in-cockpit memory aids
- briefing by way of TCTWO, often identified as a threat and mitigation also implemented
- verify on the FMS
- challenge pilot; confirm you will make the xxx restriction at xxx waypoint?'
- I rarely challenge a readback that does not contain the SID/STAR phraseology, as in reality the level/speed restrictions are part of the aircraft's clearance irrespective of the phraseology. I recognise that I sometimes omit the VIA SID/STAR unconsciously and do not feel that it alters the understanding - omission of these keywords does not authorise cancellation of the restrictions. However compliance with speed and level restrictions is not universal and I actively monitor especially for level restrictions when they are essential for separation.
- FMS alerts, setting FMS constraints that are more restrictive to ensure adherence
- GA SOPs aren't as tightly structured requiring full crew confirmation of clearances and especially amendments thereof. Clearances should be read back directly from FMS data base, altitude selector, transponder code selection and frequency assignments if given.
- manually writing the restrictions
- selected flight level (SFL) is displayed in NZ, so an incorrect setting can be challenged
- verbal clarification of requirements with ATC, if doubt exists.

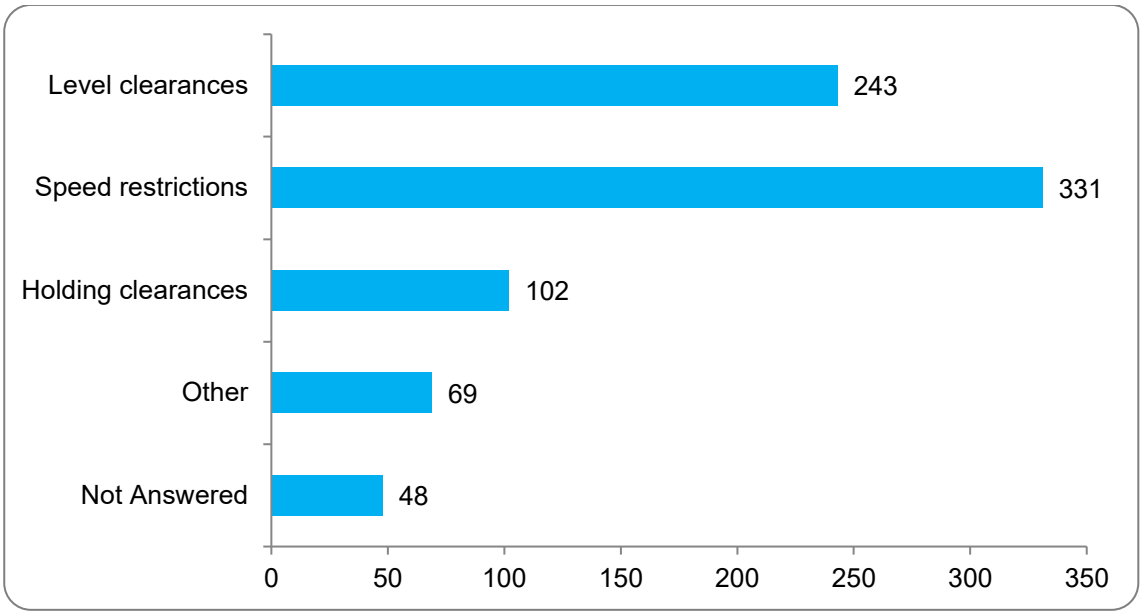
16. **Do you feel that the current phraseology provides enough clarity for understanding and compliance with specific SID/STAR chart constraints?**

There were 617 responses to this part of the question.



17. **In your experience, what are the most common areas where misunderstandings or miscommunications occur regarding SID/STAR constraints? (Select all that apply)**

There were 576 responses to this part of the question.



Please specify 'Other' if selected

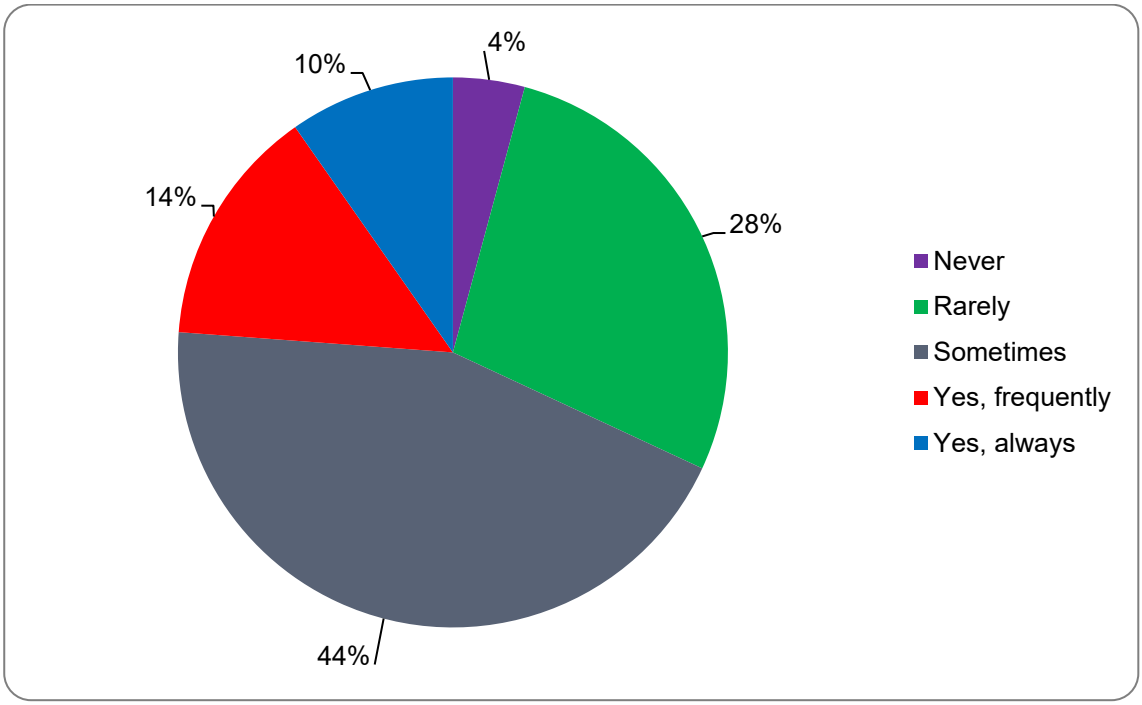
There were 84 responses to this part of the question, including the following key points:

- **Common misunderstandings:** Many respondents mentioned that misunderstandings often occur due to unfamiliar naming conventions, being taken off and rejoining, and the use of redundant phraseology like 'climb via' and 'descend via'.
- **Specific issues:** Some specific issues include poor ATC application of standard arrival routes, early speed restrictions, and the complexity of constraints when descent clearance is delayed.
- **International differences:** There are notable differences in procedures and phraseology around the world, which can lead to misunderstandings, especially for international operators.
- **Pilot and ATC perspectives:** Both pilots and ATC have their own perspectives on the issues. For example, pilots find the constant frequency congestion with climb via SID or descend via STAR infuriating, while ATC may not always realise the implications of track shortening on STARs.
- **Rare misunderstandings:** Some respondents mentioned that misunderstandings are rare or that chart briefings cover constraints adequately.

These points provide a comprehensive overview of the common areas where misunderstandings or miscommunications occur regarding SID/STAR constraints.

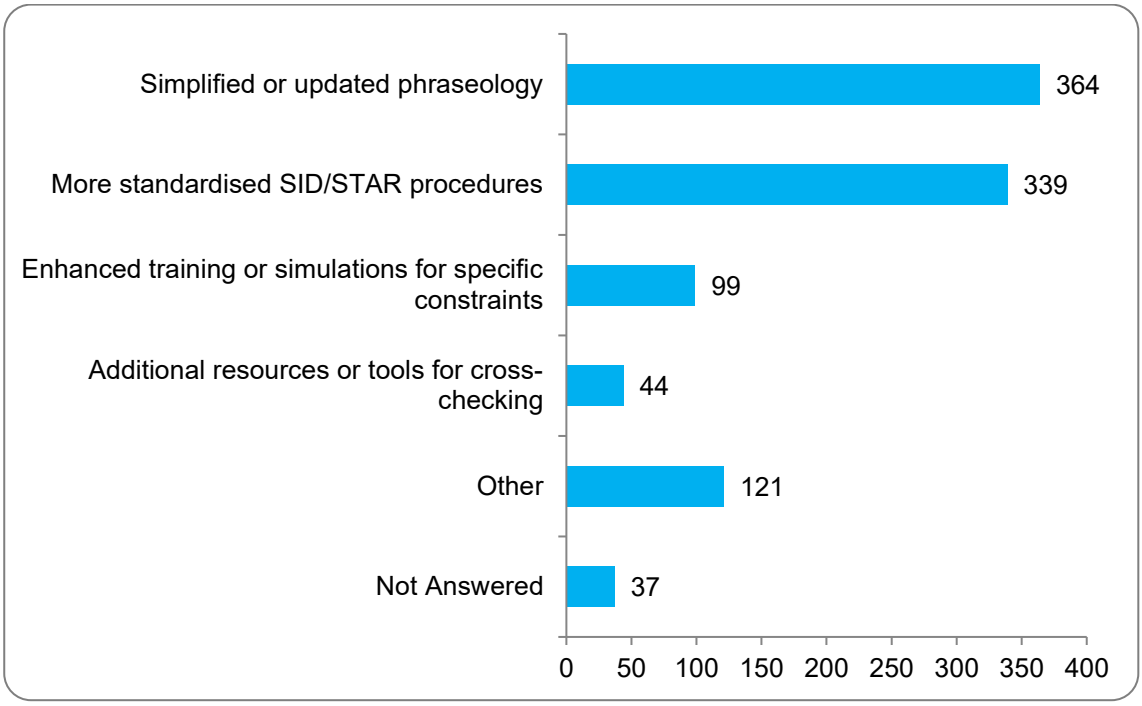
18. **Do you routinely verify with pilot/ATC about understanding of or compliance with SID/STAR constraints?**

There were 617 responses to this part of the question.



19. **What improvements do you think would enhance the conveyance of the designed SID/STAR constraints? (Select all that apply)**

There were 587 responses to this part of the question.



Please specify 'Other' if selected

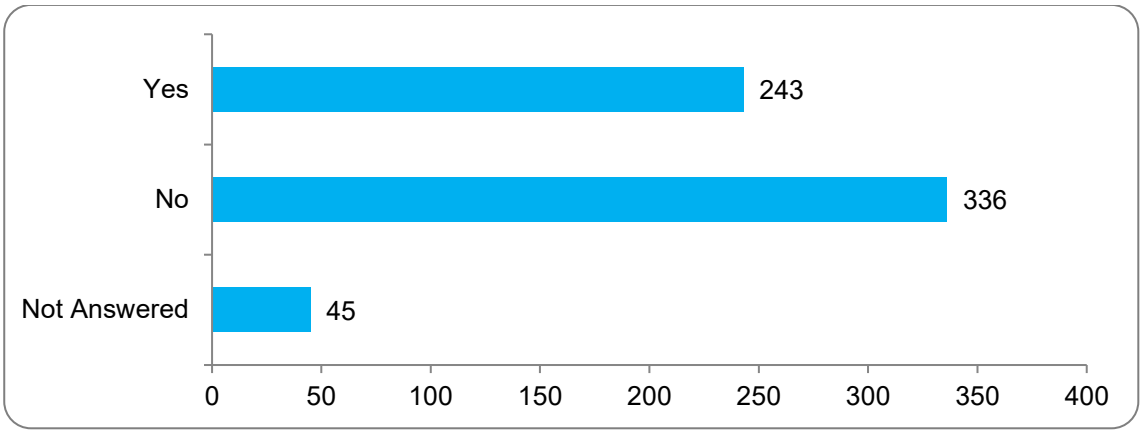
There were 144 responses to this part of the question, with the following key points:

- **Simplification and clarity:** Many respondents suggest simplifying the procedures and phraseology. This includes reducing the number of waypoints, making the procedures less complex, and using clearer, more straightforward language.
- **Design improvements:** There are calls for better design of SID/STARs to ensure they are more efficient and aligned with modern jet performance. This includes avoiding unnecessary level-offs, ensuring continuous descent profiles, and considering environmental impacts.
- **Consistency and standardisation:** Several responses highlight the need for consistency in procedures and phraseology across different regions and states. This includes adopting industry standards and ensuring that procedures are predictable and repeatable.
- **Education and training:** There is a need for better education and training for pilots, especially regarding new procedures and phraseology. This includes providing clear guidance and ensuring that all pilots are on the same page.
- **ATC communication:** Improved communication from ATC is also a common theme. This includes making clear when altitude restrictions are no longer required, reducing unnecessary radio calls, and ensuring that instructions are clear and unambiguous.

These suggestions aim to enhance the efficiency, safety, and clarity of SID/STAR procedures, ultimately reducing pilot workload and improving overall flight operations.

20. **Can you identify any waypoint constraints within the SID and STAR procedures that you believe need modification or adjustment?**

There were 579 responses to this part of the question.



If you selected 'yes', please specify the waypoint and the reason for modification

There were 237 responses to this part of the question. A table with comprehensive results is attached in Appendix B.

21. **Please describe below any phrases you believe pilots and ATC find confusing (otherwise leave blank).**

There were 299 responses to this part of the question, with the following key points:

- **Ambiguity in STAR requirements:** Early transmissions waiving STAR requirements, followed by descent clearances that include 'VIA THE STAR,' create confusion about whether charted restrictions need to be followed.
- **Speed restrictions:** Phrases like 'Cancel STAR speed restrictions' and 'resume normal speed' are unclear, leading pilots to question whether airspace restrictions, such as 250 knots below 10,000 feet, are cancelled.
- **Redundant phraseology:** The need to consistently read back 'descend via STAR' after already reading back 'cleared XYZ STAR' is seen as redundant.
- **Altitude constraints:** Phrases like 'Cleared to (level)' are ambiguous when constraints are in place. Pilots prefer clear instructions on whether constraints continue to apply.
- **Climb/descend via STAR/SID:** Many pilots find the phrases 'Climb via SID' and 'Descend via STAR' unnecessary and believe they add to verbal clutter.
- **Speed control:** Instructions like 'Cancel speed restrictions' often require clarification, as pilots are unsure which speed restrictions are cancelled.
- **Phraseology differences:** There are differences in phraseology between Australia and other countries, especially the United States, which can lead to confusion.

22. **Do you have any final suggestions for improving the phraseology within the existing broad structure of the SID/STAR procedure?**

There were 243 responses to this part of the question, with the following key points:

- **Reconsider use of 'CLIMB/DESCEND VIA' for every transmission:** The repeated use of 'Climb via SID'/'descend via STAR' phraseology is seen as redundant; since the SID/STAR is already being followed, restating this instruction adds unnecessary radio traffic and may confuse international operators, prolonging communications for little benefit.
- **Use SID/STAR phraseology only when procedure calls for it:** Phraseology should be applied only when a specific requirement within a SID/STAR calls for it, not as a blanket instruction. If requirements are not applicable or have been cancelled, repeating the phraseology is considered meaningless and should be avoided.
- **Feeder fix instructions involving speed and time:** There are persistent issues with pilots misunderstanding feeder fix instructions involving speed and time: Despite longstanding procedures, some pilots reduce speed to 250 knots at the feeder fix regardless of time requirements, causing ongoing adjustments to STAR restrictions. A proposed solution is to split the instruction into 2 transmissions: first, 'Adjust speed to cross (feeder fix) at time,' followed by a pause for read back, then 'From (feeder fix) speed 250 kts.' However, this would increase radio transmissions, which is not ideal.
- **'via STAR' in en route instructions:** The requirement to include 'via STAR' in en route instructions is considered unnecessary and even counterproductive.
- **Failure to address feedback:** There is criticism that feedback from air traffic controllers was largely ignored, suggesting a disconnect between policy and operational experience.
- **Ambiguity in speed control instructions/requirements:** Clarification is needed regarding speed cancellation phraseology: 'Cancel climb speed' only waives the 250 knot speed below 10,000 feet, whereas 'Cancel SID speeds' does not automatically waive all speed restrictions. Similar ambiguity exists with descent speeds and STAR speed cancellations. The phrase 'Cancel remaining speeds' is preferred for its clarity.
- **Waypoint names:** Waypoint names should be chosen to be easy to pronounce to facilitate efficient and error-free communication, focusing on height and speed limits rather than complex readbacks of waypoint names.
- **Commencement of STAR instructions:** It was recommended to avoid STAR-related phraseology in control instructions until the STAR procedure has actually commenced, to reduce confusion and unnecessary communications.

23. **Do you have any additional feedback based on your interactions with SID/STAR phraseology? This should not include points you have already raised.**

There were 147 responses to this part of the question, with key points as follows:

- **Procedure design:** Several comments highlight issues with procedure design, such as the need for simplification, alignment with arrival procedures, and reducing radio congestion. There are suggestions to keep procedures strictly ICAO without local variations.
- **Speed and altitude restrictions:** Pilots express concerns about speed and altitude restrictions, particularly during descent. There are requests for more efficient descent profiles and better coordination of speed control.
- **Track shortening:** Track shortening is appreciated for timesaving but can cause havoc with descent profiles. Pilots request early notification of expected track shortening.
- **Phraseology:** There are mixed opinions on the phraseology used. Some find it unnecessary and verbose, while others believe it enhances communication between pilots and air traffic controllers. There are suggestions to simplify phraseology and reduce radio traffic.
- **Training and education:** Pilots suggest more training on SID/STAR procedures, especially for lower-time pilots. There are requests for dedicated training about SIDs and STARs at busy training locations.
- **Environmental and efficiency concerns:** There are concerns about the environmental impact and fuel efficiency of current procedures. Pilots suggest redesigning procedures to be more efficient and sustainable.
- **ATC coordination:** Pilots request better coordination and understanding from ATC regarding late changes and their impact on descent profiles. There are suggestions for more efficient sequencing and flow control.
- **General feedback:** Some pilots express satisfaction with the current procedures, while others believe there is room for improvement.

Overall, the feedback emphasises the need for simplification, better coordination, and more efficient procedures to enhance safety and reduce environmental impact.

Appendix B
Waypoints with specifically identified issues

Location(s)	Procedure Name(s)	Waypoint name(s)	Issue
All places			250kt sometimes too slow for departures at heavy weights
All places			185 kt speed restriction difficult for jets using standard FMS profile - 200/210kt would be better
NZCH			CHC STARS do not allow for B737 deceleration profile so generate 'STEEP DESCENT AFTER…' messages
YBBN		ABRAM	Speed restrictive to achieve 9000ft
YBBN	BIXAD TWO	ALBUB	Combination of tight turn and accelerating aircraft increases risk of path overshoot
YBBN		ATRAX	3000ft requirement forces low profile and excess thrust to maintain
YBBN		DADAN	Maximum 220kt causes high climb rate and increased risk of RA with other traffic
YBBN	MORBI TWO ALPHA	GAYLA	Causes high workload due proximity to transition level and frequency change point
YBBN		GLENN	3000ft very limiting and easy to miss
YBBN	BLAKA SIX XRAY	LAGEV	AGEV above 9000/below F120. Avoid use of 'Between' altitude constraints. Difficult for some FMCs.
YBTL	ADNOD ONE	ADNOD	Below 8000ft restriction
YMEN			9000 x 30 ML requirement does work for an EN arrival. Align level/distance with actual destination

YMML	WENDY ONE ALPHA 27	KEELA	At or above 6000 too high/limiting
YPPH		HAIGH	Procedure restricts to 4000ft for too long
YPPH		JULIM	Needs a 9000ft or above constraint to reduce workload (ATC and pilot)
YPPH	KABLI ONE VICTOR	KARGO	At Kargo, 9 miles out is a little far to plan the safest descent over the hills
YSSY		BANDA	BANDA restrictions appear to be unconnected with SID
YSSY		BEROW	9000ft restriction restrictive
YSSY		TAMMI	9000ft restriction is restrictive
YSSY	BOREE FOUR ALPHA	OVILS	Align OVILS with TONUX to smooth transition
YSSY	BOREE FOUR ALPHA	TONUX	Align OVILS with TONUX to smooth transition
YWLM	MONDO ONE	DOXIR	7000ft restriction difficult to achieve at full loads