Approved by the Tactical Operations Committee March 2016

Process and Criteria for Cancellation of Instrument Flight Procedures

Report of the Tactical Operations Committee in Response to Tasking from the Federal Aviation Administration

March 2016

Process and Criteria for Cancellation of Instrument Flight Procedures

Contents

Introduction

In February 2015, the Federal Aviation Administration (FAA) requested the Tactical Operations Committee (TOC) provide feedback and recommendations on criteria and processes for cancellation of instrument flight procedures in the National Airspace System (NAS). The full tasking letter is in Appendix A of this report. The TOC established the National Procedure Assessment (NPA) Task Group to develop draft recommendations for the TOC by March 2016. The Task Group Members are shown in Appendix B. This report covers the discovery process, findings and recommendations of the NPA Task Group.

Terminology

Common terms used throughout this report are presented below to ensure clarity to the reader:

- The effort documented in this report is focused on cancellation of Instrument Flight Procedures (IFPs) in the National Airspace System (NAS). There are four broad types of IFPs – Instrument Approach Procedures (IAPs), Standard Instrument Departures (SIDs), Standard Terminal Arrivals (STARs) and Routes. Recommendations are organized around IAPs, with specific emphasis on Circling IAPs, as well as a combination of SIDs and STARs. Routes are not addressed in this report.
- IAPs are "a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually."[1]
- Circling procedures, which are addressed independently from other IAPs in this report, are comprised of circling only procedures as well as circling minima charted on a straight-in IAP. A circling maneuver is "initiated by a pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable."[2]
- Other IAPs are broken down by Ground-based IAPs and Performance Based Navigation (PBN) IAPs. PBN IAPs are comprised of all Area Navigation (RNAV)-related procedures as well as Global Navigation Satellite System (GNSS) Landing System (GLS) procedures. The remaining IAPs are grouped under Ground-based IAPs.[3]
- SIDs and STARs can be further broken down into Conventional and RNAV procedures. SIDs are preplanned instrument flight rule (IFR) air traffic control (ATC) departure procedures printed for pilot/controller use in graphic form to provide obstacle clearance and a transition from the terminal area to the appropriate en route structure. Conversely, a STAR provides transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area. SIDs and STARs are primarily designed for system enhancement to expedite traffic flow and to reduce pilot/controller workload.[4]

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[1] FAA Pilot / Controller Glossary, page PCG I–3
[2] FAA Pilot / Controller Glossary, page PCG C–2
[3] The report acknowledges that there are some PBN procedures that may rely on ground-based infrastructure.
[4] FAA Pilot / Controller Glossary, page PCG S–6

Background

The National Airspace System is currently in transition to a Next Generation Air Transportation System, also known as "NextGen". The NextGen NAS will rely on modern technology for communication, navigation and surveillance of air traffic operations. During this transition, the Federal Aviation Administration is managing the technology and procedures to support both the current mostly ground-based NAS as well as the satellite/flight deck-based NextGen NAS. Managing a NAS with redundant legacy elements requires excess manpower, infrastructure and information management, which is costly and unsupportable in the long run. To mitigate these costs, the FAA has a number of efforts underway to reduce elements of the legacy NAS.

One area of focus for transition is Instrument Flight Procedures. For IFPs, the "FAA seeks to ensure an effective transition from ground-based airways, routes and instrument flight procedures to greater availability and use of satellite-based routes and procedures while still maintaining NAS safety." [5]

In recent years, the FAA has undertaken focused efforts to remove unnecessary or redundant IFPs from the NAS. Since 2013, the National Procedure Assessment effort has identified criteria and candidate ground-based IAPs for cancellation. Cancellation of IAPs are governed by Federal Aviation Regulation (FAR) Part 97 and follows a process with regulatory requirements that include public comment. The Procedure Review Refine Remove Team (PRRRT) has worked in a similar timeframe to remove select SIDs and STARs from the NAS. SIDs and STARs are not covered in Part 97, making their cancellation a non-regulatory process with no requirement for public comment.

Looking forward, the "FAA seeks to establish a repeatable process and plan to cancel redundant or excess [instrument flight] procedures and reduce the maintenance costs associated with them." [6] Previous efforts have been led by FAA-focused teams. The FAA is interested to engage the broader operational stakeholder community to solicit recommendations on how to develop a process and criteria to effectively remove unneeded procedures from the NAS.

The Tactical Operations Committee was requested by the FAA to provide industry input and recommendations around the process and criteria for instrument flight procedure cancellation in both the regulatory and non-regulatory frameworks. Specifically, the TOC was requested to:

1. Review current FAA efforts in procedure cancellation and recommend any changes.
2. Review proposed implementation plans and provide recommendations.
3. Assess the effectiveness of outreach planned and accomplished by FAA.
4. Provide recommendations on what procedures FAA should look at next.

This report serves as the TOC's recommendation on this tasking.

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[5] Letter from Elizabeth L. Ray (Vice President, Mission Support Services) to Margaret Jenny (RTCA President) dated February 4, 2015. See Appendix A for full letter.
[6] Ibid

Executive Summary

As the National Airspace System transitions to a Next Generation Air Transportation System, the FAA is challenged to manage the technology and procedures to support both the current, mostly ground-based NAS as well as the Performance Based Navigation NextGen NAS. At the core of the challenge is to modernize with the newer technology satelite/flight deck-based procedures while maintaining only the necessary legacy systems to maintain access while managing risk and costs. Managing a NAS with the new technologies and all of the current redundant legacy elements is costly and unsupportable in the long run.

The focus of this report is to identify unnecessary procedures to reduce the overall cost to the FAA which will allow the FAA to better maintain current procedures and create additonal NextGen procedures where needed to improve access to airports, runway ends, and communities throughout the nation.

In Fiscal Year 2015, the FAA spent approximately $50 million on maintenance and flight inspection of its current IFP inventory. As of the February 4, 2016 Charting Cycle, there were 33,004 IAP Lines of Minima and SIDs/STARs. Each individual Line of Minima or Procedure drives some element of the cost of maintenance, though the cost is not equivalent across all types of procedures.

To help mitigate these costs to allow for better funding utilzation, the FAA is seeking to remove unnecessary or reduntant Instrument Flight Procedures from the NAS. The RTCA Tactical Operations Committee was tasked by the FAA to offer recommendations on cancelling IFPs. This report serves as the TOC's response and offers recommendations on both criteria development and process development to reduce procedures and Lines of Minima not required in the NAS. The TOC stresses that reduction of unnecessary procedures is a worthy effort for the FAA as it contributes to the reallocation of capital resources toward both maintenance of the NAS as well as meeting current and future needs at additional airports and runway ends.

Recommendations in this report are organized around cancellation criteria for Instrument Approach Procedures, with special emphasis on Circling Approaches, as well as for the combination of SIDs and STARs. The table to the right depicts which types of procedures were evaluated by the TOC for cancellation and which were not (as part of these recommendations).

For Circling procedures, which are comprised of Circling Only procedures as well as the circling minima charted on a straight-in IAP, a decision tree

Type of IFP	Additional Breakdown of IFPs		Assessment
1. Circling	-	-	●
2. Instrument Approach Procedures (IAPs)	Ground-Based IAPs	ILS	●
		LOC	●
		LOC (B/C)	●
		LDA	●
		LDA PRM	●
		Side Step	●
		VOR / DME RNAV	●
		NDB	●
		TACAN	●
		VOR	●
		VOR / DME	●
		MLS	●
		TLS	●
		SDF	●
		PAR	●
		ASR	●
	PBN IAPs	RNAV	●
		GLS	●
3. SIDs and STARs	Conventional	SID	●
		STAR	●
	RNAV	SID	●
		STAR	●

Legend
- ● Evaluated for cancellation
- ● Not evaluated at this time

with seven criteria is presented to identify candidates for cancellation. Applying these criteria to a set of nine case study airports, approximately 60% of circling procedures/Lines of Minima were identified as candidates for cancellation.

For those ground-based IAPs evaluated for cancellation[7], specific recommendations are offered for each type of ground-based IAP. For NDB, TACAN, VOR and VOR/DME procedures, specific recommendations are offered to improve upon the cancellation effort the FAA has had underway since August 2013. Recommendations are included to remove MLS, TLS and SDF procedure types from the inventory. Finally, the report offers recommendations to remove PAR and ASR procedures at civilian only facilities.

PBN IAPs are identified as an important component of the future of the NAS, so national-level criteria to identify candidates for cancellation were not developed. Instead, the report recommends that the FAA identify redundant PBN IAPs at a local level.

For SIDs and STARs, a decision tree with multiple objective critria is presented to identify candidates for cancellation.

The report includes a recommended process for procedure assessment and cancellation. The process suggested is to develop cancellation criteria at a national level and rely on the Service Center and Local Air Traffic facilities to make final determinations about what procedures are cancelled. The recommendations stress the importance of involving both air traffic and flight operator expertise in cancellation of all types of procedures. The report recommends the process be conducted on a recurring basis and that criteria be periodically re-examined at a national level.

The cancellation of procedures in the NAS is critical to manage cost during the transition to NextGen. However, the FAA must exercise care during the process and ensure that all stakeholders have a voice in the process. Successful cancellation of unnecessary or redundant procedures will ensure that scarce resources are applied to maintenance of necessary existing procedures as well as development of new, required procedures throughout the NAS.

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[7] Includes MLS, TLS, SDF, PAR, ASR, NDB, TACAN, VOR and VOR/DME procedures

Methodology

The TOC established the National Procedure Assessment Task Group to deliberate and deliver a set of recommendations to address the FAA's task request. The NPA Task Group included stakeholders across all aspects of aviation operations:

- Aircraft Owners and Pilots Association (AOPA)
- Air Line Pilots Association (ALPA)
- Air Wisconsin
- American Airlines
- Department of Defense (DoD)
- National Air Traffic Controllers Association (NATCA)
- National Business Aviation Association (NBAA)
- National Association of State Aviation Officials (NASAO)
- The MITRE Corporation
- Multiple branches of the FAA in both Headquarters and the Service Centers, as well as FAA contractors supporting these organizations
- Southwest Airlines
- United Airlines

The intent of the Task Group was to compile a broad team covering all types of operators along with participants from the FAA that were directly involved in previous NPA and PRRRT efforts. Members of the Task Group are included in Appendix B.

Initially, the Task Group learned about the FAA's costs for procedure maintenance, and it became apparent that maintenance cost varied across each individual IFP. The Task Group subsequently examined different types of procedures as the FAA categorizes them on their Instrument Flight Procedures Inventory Summary page.[8] The breakdown from the IFP Inventory Summary page is presented in Figure 1. Note that additional detail on the counts of each type of procedure are found in the section "Procedure Counts and Costs".

The Task Group elected to organize its work around the breakdown of IFPs presented in Figure 1. The group considered each procedure type and developed a high level finding for each – either to develop criteria for cancellation or to not address the category at this time. For those categories that warranted development of criteria, the Task Group conducted a deeper examination to develop criteria for cancellation.

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[8] See: https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/ifp_inventory_summary/

Figure 1 Types of Procedures on FAA's IFP Inventory Summary Page

Type of IFP		Details		
1. Circling	-	-		ILS
2. Instrument Approach Procedures (IAPs)	Ground-Based IAPs	ILS		ILS (CAT II)
		LOC		ILS (CAT III)
		LOC (B/C)		ILS SA
		LDA		ILS SA (CAT II)
		LDA PRM		ILS PRM
		Side Step		
		VOR / DME RNAV		
		NDB		
		TACAN		
		VOR		
		VOR / DME		
		MLS		
		TLS		
		SDF		
		PAR		GPS (Stand - Alone)
		ASR		RNAV (LNAV)
	PBN IAPs	RNAV		RNAV (LNAV / VNAV)
		GLS		RNAV (LPV)
3. SIDs and STARs	Conventional	SID		RNAV (LP)
		STAR		RNAV (RNP) (Public)
	RNAV	SID		
		STAR		

Regulatory (rows 1–2), *Non-Regulatory* (row 3)

The Task Group also examined the processes utilized by the previous NPA and PRRRT efforts and offered a proposal for a future repeatable cancellation process.

Finally there were a few subject areas the Task Group discussed that were slightly beyond the scope of the original tasking. For these, the group documented its thinking and included these recommendations in the final section "Additional Recommendations," with the acknowledgement that they may be considered on the edge of scope. These areas primarily focused on recommendations on ways to enhance the FAA's capacity for procedure maintenance beyond cancellation.

Guiding Principles

A series of high level guiding principles were developed to provide context for the recommendations in this report:

- Frequency of use of a procedure was discussed and identified as a possible criteria for consideration in cancellation. Some procedures, while utilized minimally, are of high operational value when needed. Utilization was determined not to be a stand alone criterion for a variety of reasons, including the fact that usage data can be inaccurate or unavailable in some cases.
- The Task Group's effort was focused on a NAS-level examination of public procedures maintained by the FAA. There are other important procedure types not included in this effort, including charted visuals and those Special IFPs authorized by Operation Specifications or Letters of Agreement (LOAs), including RNAV visuals. Additionally, this effort did not define specific criteria for special operating conditions, such as those in Alaska, where additional considerations may be required.
- The FAA procedure reduction program is highly dependent upon and interwoven with other efforts. These include the VOR Minimum Operating Network (MON), the Performance Based Navigation (PBN) NAS Navigation Strategy effort and the ongoing rewrite of the Regional Airspace Procedures Team (RAPT) Order. Clearly, the FAA will need to remain synchronized across all of these as it moves forward on this and future efforts. For example, the VOR MON Program will identify a set of procedures required for MON airports, and these should not be cancelled as part of the NPA effort.
- Airways were deemed to be beyond the focus of this group's effort. Discussion around airways did not synchronize with the Task Group's focus on IAPs and SIDs/STARs. Additionally, the group recommended that criteria for cancellation of routes be included as part of a new TOC task related to evaluation of the PBN Route Structure Concept of Operations. The TOC anticipates this task request from the FAA on the PBN Route Conops by March 2016 and that it will include a request for criteria for cancellation of routes.
- While the Task Group sought opportunities to align the regulatory and non-regulatory tracks related to procedure cancellation, alignment was not a primary goal in and of itself.
  - The Task Group did not introduce any additional process steps when they were not necessary. There was a concerted intent not to introduce requirements of the regulatory cancellation process into the non-regulatory process.
- When evaluating any procedure, air traffic personnel and operators should be involved.

Procedure Counts and Costs

FAA Flight Procedures

The FAA publishes its inventory of Instrument Flight Procedures on its IFP Inventory webpage and updates this information every 56 days[9]. The data below, drawn from this inventory webpage, depicts counts of procedures in the NAS, broadly organized in this report by Circling, Ground-based and PBN IAPs as well as Conventional and RNAV SIDs and STARs. The data presented is for the February 4, 2016, Publication Cycle and the "Change" noted in the table depicts the difference in procedure counts from October 15, 2015 to February 4, 2016.

Figure 2 Counts by Type of IFP (as of 2/4/16)

Type of IFP	Additional Breakdown of IFPs		Count	Pct	Change Oct'15 - Feb'16
1. Circling	-	-	10,286	31%	-158
2. Instrument Approach Procedures (IAPs)	Ground-Based IAPs	ILS	1,760	5%	8
		LOC	1,437	4%	4
		LOC (B/C)	67	0.2%	-1
		LDA	33	0.1%	1
		LDA PRM	1	0.003%	0
		Side Step	80	0.2%	-3
		VOR / DME RNAV	6	0.02%	0
		NDB	624	2%	-61
		TACAN	15	0.05%	0
		VOR	1,180	4%	-51
		VOR / DME	838	3%	-89
		MLS	0	0%	0
		TLS	0	0%	0
		SDF	5	0.02%	-1
		PAR	7	0.02%	0
		ASR	220	1%	-2
	PBN IAPs	RNAV	14,650	44%	168
		GLS	11	0.03%	0
3. SIDs and STARs	Conventional	SID	540	2%	-1
		STAR	313	1%	0
	RNAV	SID	567	2%	23
		STAR	364	1%	2
	Total -->		33,004		-161

ILS Detail	Count
ILS	1288
ILS (CAT II)	157
ILS (CAT III)	120
ILS SA	124
ILS SA (CAT II)	33
ILS PRM	38

| RNAV Detail	Count
GPS (Stand - Alone)	97
RNAV (LNAV)	6065
RNAV (LNAV / VNAV)	3502
RNAV (LPV)	3643
RNAV (LP)	615
RNAV (RNP) (Public)	728

Presenting counts of IAPs can be confusing and some clarification is offered on how to interpret the numbers in the figure above. As noted earlier, IAPs are a predetermined set of maneuvers graphically depicted in an IAP chart that transfers an aircraft from the enroute flight environment to the terminal area for landing or a point from which a visual landing may be conducted. Some IAPs charts offer

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[9] https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/ifp_inventory_summary/

different methods by which an aircraft may conduct the approach, based either on the status of the Navigational Aid (NAVAID) or on the aircraft equipage. For example, in the IAP chart below "ILS OR LOC 31L" to Seattle's Boeing Field (BFI), the aircraft may execute the IAP using an ILS (Instrument Landing System) or LOC (Localizer) only. If the approach is flown via the LOC, the Minimum Descent Altitude (MDA) for the pilot to execute the approach is 700 feet for a Category A aircraft while the Decision Altitude (DA) for the ILS is 428 feet. Additionally, the approach may be used to execute a Circling maneuver to BFI with a circling MDA of 780 feet.

For the "RNAV (GPS) RWY 26R" to Miami International (MIA), the approach may be executed using various equipment options for lateral and/or vertical guidance. The minimum altitude for the pilot varies between a 273 foot DA and 480 foot MDA depending on what technology the aircraft is using.

Figure 3 Sample Approach Charts
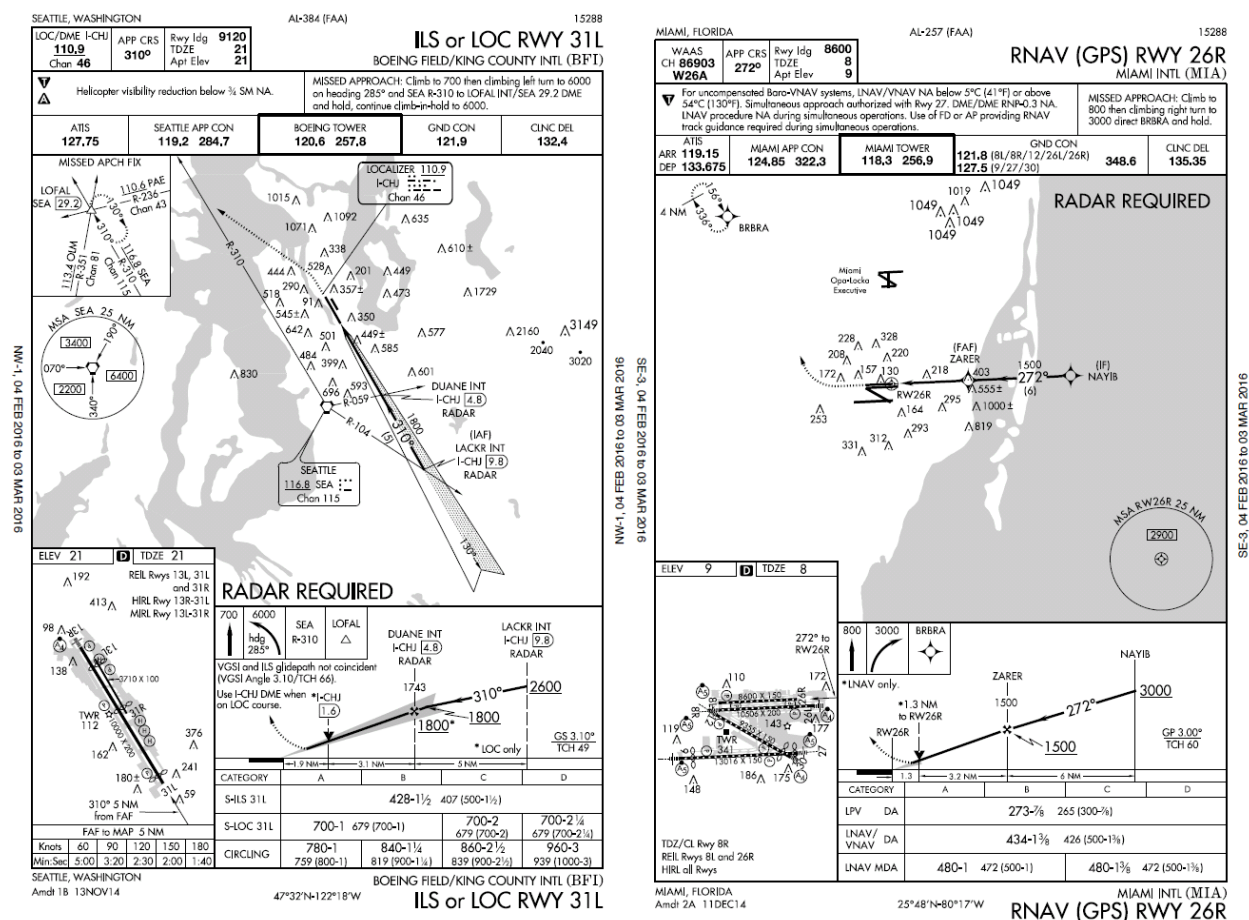
These examples demonstrate that the same approach chart may have different DAs/MDAs based on variations in NAVAID status, different on-board equipment or whether the IAP chart leads to a Circling maneuver. These different DAs/MDAs for the same set of approach maneuvers are referred to as Lines of Minima (LoM). Each individual IAP chart can have between one and five Lines of Minima. The "ILS RWY 31L" IAP has three LoM and the RNAV (GPS) RWY 26R IAP has three LoM.

Figure 2 presents all Lines of Minima (LoM) for procedures in the NAS. Recent FAA efforts suggest there are approximately 16,500 unique IAP Charts in the NAS[10] that correspond to the approximately 31,220 LoMs for IAPs noted in the Figure 2. (SIDs and STARs do not have LoMs.)

This group elected to count procedures according to the number of LoM as presented in the FAA's IFP Inventory. The FAA's Aeronautical Information Services Directorate, which develops and maintains IAPs, suggested that each individual LoM drives some, though not equal, workload during procedure development and maintenance. As this effort is focused on reducing FAA's maintenance cost for procedures, the group decided to count all LoMs.

Cost of Procedure Maintenance

According to the FAA's Aeronautical Information Services (AJV-5) and based on the most current available financial data, the FAA spent approximately $41.2 million on procedure maintenance for Fiscal Year 2015. This annual maintenance cost includes Notice to Airmen (NOTAMs) as needed for procedures, reviewing procedure impact based on proposed obstacles, non-procedural changes, scheduled procedure periodic review, and amendments resulting from user requests or changes to criteria. According to FAA Flight Inspection Services (FIS), flight inspection cost the FAA an additional $8.2 million in FY2015. The FAA bears a significant cost for maintenance of procedures, so any reduction of unnecessary procedures would contribute to reallocation of capital resources toward the maintenance of the NAS.

Additionally, there is significant variability in the maintenance costs associated with any individual procedure. The reader should take into account that the variables used to arrive at the approximate maintenance cost is a snap shot in time of available data on the specific date the totals were attained. Though an average cost measurement could be presented, the high variability of individual procedure maintenance suggests that any average number would not be representative of maintenance costs for most cases.

Finally, it is worth noting that maintenance costs for Circling LoMs are likely lower than other types of IAPs. The circling approach area is constant for the airport and each runway, so development and scheduled, periodic maintenance is a single cost, even if the approach is listed as a LoM on multiple other IAPs. However, maintenance cost to review obstacle impact does accrue for each individual instantiation of the Circling LoM.

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[10] This data is drawn from procedure evaluations conducted during assessment of 20:1 visual surface areas

Recommendations for Each Type of IFP

Each type of Instrument Flight Procedure was assessed by the Task Group and the group determined whether or not to pursue criteria for cancellation for each. A summary of the Task Group assessment is included in the table below.

Figure 4 Task Group Assessment for each Type of Instrument Flight Procedure

Type of IFP	Additional Breakdown of IFPs		Assessment
1. Circling	-	-	●
2. Instrument Approach Procedures (IAPs)	Ground-Based IAPs	ILS	●
		LOC	●
		LOC (B/C)	●
		LDA	●
		LDA PRM	●
		Side Step	●
		VOR / DME RNAV	●
		NDB	●
		TACAN	●
		VOR	●
		VOR / DME	●
		MLS	●
		TLS	●
		SDF	●
		PAR	●
		ASR	●
	PBN IAPs	RNAV	●
		GLS	●
3. SIDs and STARs	Conventional	SID	●
		STAR	●
	RNAV	SID	●
		STAR	●

Legend
- ● Evaluated for cancellation
- ● Not evaluated at this time

The following sections provide a detailed examination for each type of Instrument Flight Procedure in the table above. Detail includes the rationale for not evaluating some type of procedures for cancellation at this time as well as criteria for cancellation for those types that were evaluated for cancellation.

Procedures Not Evaluated for Cancellation at this Time

Recommendation 1a. Do not evaluate all types of Instrument Landing System (ILS) Procedures for cancellation at this time.

There is another working group that is in the initial stages of evaluting the rationalization of ILS procedures. Additionally, the NPA Task group elected to avoid cancellation of procedures with vertical guidance when possible.

Recommendation 1b. Do not evaluate LOC and LOC (B/C) Procedures for cancellation at this time.

A significant majority of Localizer (LOC) and Localizer back-course (LOC B/C) procedures are associated

with existing ILS equipment. Given the conclusion not to evaluate all types of ILS procedures for cancellation, the group recommends LOC and LOC (B/C) also not be considered for cancellation at this time.

Recommendation 1c.	Do not evaluate LDA and LDA PRM Procedures for cancellation at this time.

The Task Group recognizes that most Localizer type directional aid (LDA) procedures exist for critical operational reasons so the group elected not to focus on cancelling these types.

Recommendation 1d.	Do not evaluate Side Step Procedures for cancellation at this time.

Given the small number of Side Step procedures and no immediate rationale for their cancellation, the Task Group elected not to focus on cancelling these types.

Recommendation 1e.	Do not evaluate VOR / DME RNAV Procedures for cancellation at this time.

The FAA is already in process of cancelling VHF Omni-directional Range / Distance Measuring Equipment (VOR / DME) RNAV procedures so there was no need for the Task Group to consider this type.

Recommendation 1f.	Do not evaluate GLS Procedures for cancellation at this time.

GLS is a new and emerging type of Instrument Approach Procedure and expansion of Ground-Based Augmentation System (GBAS) equipage and GLS procedures is anticipated in the future. Given this type of procedure is expected to grow, the group elected not to consider it for cancellation.

Circling Procedures

Circling procedures are comprised of circling-only procedures and the circling minima charted on a straight-in IAP. Together these make up 31% of all Lines of Minima in the NAS. As the FAA adds more straight-in PBN approaches to runway ends in the NAS, circling minima may not be beneficial for every IAP. However, in some cases, these procedures are still necessary under a defined set of criteria and provide benefits at airports of varying size and complexity. Examples include:

- **Airport Access and Operational Efficiency –** Circling-only procedures are utilized in areas where terrain or obstructions may preclude a straight-in IAP being the optimal IAP to that runway or airport. Noise abatement and airspace concerns can also result in a circling-only procedure offering the most favorable lateral navigation to a runway of all the IAPs available.[11] Airport construction and other uncommon events can also be mitigated by the availability of a circling minima thanks to the flexibility they provide.

- **Airmen Training and Testing Requirements –** Pilots testing for the airplane Instrument Rating, Airline Transport Pilot, or Certified Flight Instructor Instrument certificate may be required by the Practical Test Standards, or the new Airmen Certification Standards, to demonstrate a circling approach. Pilots undergoing an airplane Instrument Proficiency Check are also required to demonstrate a circling approach. An IAP with a circling LoM must remain accessible due to its continued importance for pilot training, testing, and proficiency. Having such approaches available within 20 nm to facilitate training will help accomodate user access to required approaches for traning.

- **Resiliency –** Given the ongoing removal of ground-based IAPs from the NAS, a GNSS outage could have a larger impact if the remaining ground-based IAPs did not have circling minima. Aircraft may need to utilize the available ground-based approach to descend through a cloud layer and then circle to another runway.

Below, criteria are presented that take into account those circling procedures considered to have value but identify the redundant and unnecessary ones for possible elimination, pending stakeholder review through the applicable processes. A complete removal of circling procedures was determined to not be realistic given how these procedures are utilized by all types of operators, and in some cases, are used to make departures feasible based on meteorological conditions.

To validate the criteria, nine airports of various size and purpose were chosen as case studies. The application of the criteria revealed an average of 60% of circling procedures published at the case study airports would be forwarded for further consideration for cancellation (See Appendix C for additional detail). Further recommendations in this report suggest procedures that are candidates for cancellation should follow the regulatory cancellation procedure which involves a comment period for stakeholders including air traffic control, operators, airports and airport governing bodies.

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[11] An example is the VOR-F approach to runway 31 at LGA

The criteria does not include study of published side-step LoM and it would not prevent an operator from conducting a circling maneuver in visual conditions. Additionally, the criteria does not address the impact on airport protected areas or Part 77 criteria.

Recommendation 2a. Identify candidate Circling Procedures for potential cancellation according to the criteria in the figure below.

Figure 5 Decision Tree for Identifying Candidates for Removal of Circling Procedures

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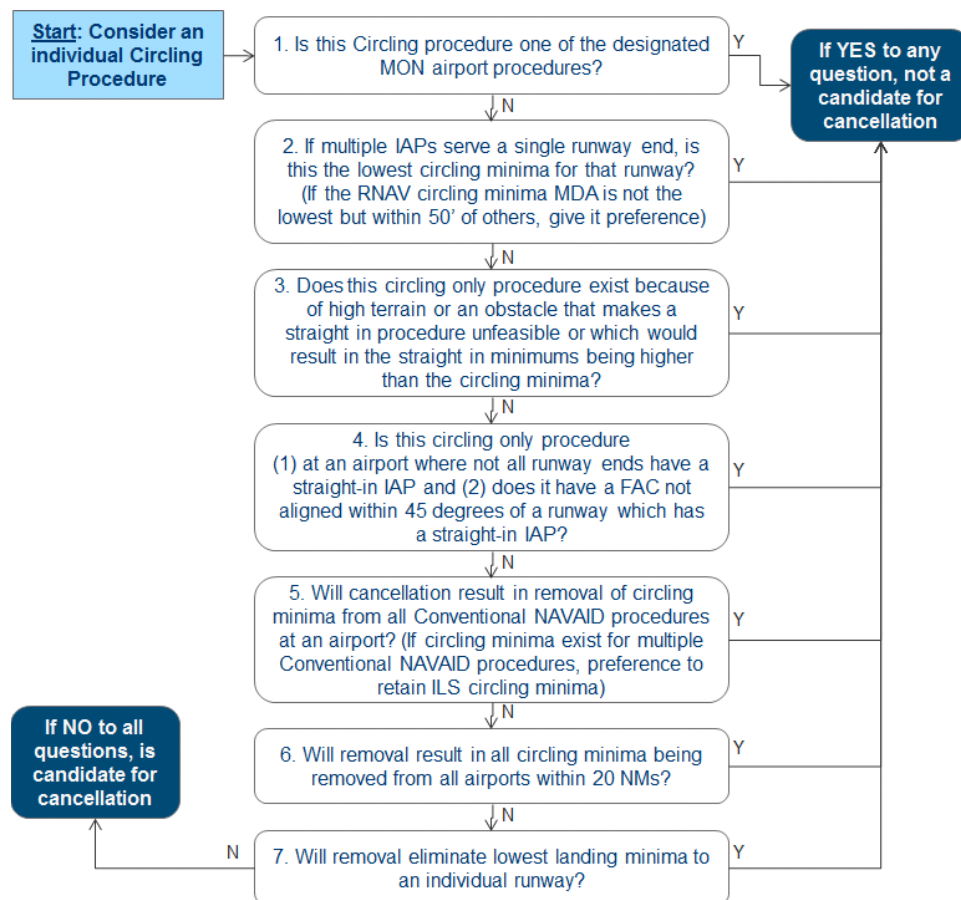
Recommendation 2b. The FAA should coordinate with simulator operators prior to removal of any IFPs, particularly Circling Procedures.

Currently, Part 142 Training Center training specifications list what procedures are usable in simulators for circling proficiency. These procedures are included in the specifications for individual training centers and individual training operators have one certificate management office. However, there is no single NAS-wide list of all procedures approved and utilized for training. Instead, this knowledge is distributed across simulator operators. In 1995, when Denver International Airport (DEN) opened and the old Stapleton Airport closed, certain procedures used for training utilizing Stapleton in a variety of Training Centers and equipment were lost, impacting training NAS-wide. In an effort not to repeat this scenario, the FAA should strive to understand the full set of procedures utilized in simulator training and ensure there is coordination with simulator operators prior to procedure cancellation.

Ground-based Instrument Approach Procedures

NDB, TACAN, VOR and VOR/DME Procedures

Ground-based IAPs are largely being replaced by PBN procedures that offer many advantages except where the ground-based IAP is necessary for access or resiliency[12]. The group reviewed the FAA's ongoing process for removal of Non-directional beacon (NDB), Tactical air navigation system (TACAN), VOR and VOR/DME procedures, which has been ongoing since 2013. The FAA first circularized criteria for the reduction of NDB and VOR IAPs in August 2013 with the removal policy finalized in June 2014. (See Appendix D for FAA's Final Rule on Criteria for Ground Based IAP Cancellation.) An initial 736 IAPs were identified for removal and circularized with stakeholders in April 2015. Of the initial list, approximately 334 IAPs will be removed according to a November 2015 announcement. The FAA began cancelling these IAPs in December 2015 and will complete the effort by March 31, 2016.

The group reviewed the regulatory process undertaken by the FAA to publish criteria for comment and to then publish a cancellation candidate list for comment. The group found it was sound but had room for improvement. Beyond what was already done, the group offers several recommendations below to further improve the process in the future. Additional improvements are included in the section "Recommendations on the Outreach for All Procedure Cancellation" later in this report:

Recommendation 3a.	**For ground-based IAP policy, expand the current criteria "Extensive use by the military for training and/or proficiency" to "Extensive use by civil or military operators for training, flight test and/or proficiency".**

Recommendation 3b.	**Include "No other airport within 20 NMs with a similar type of IAP" as an additional factor for consideration in cancellation of ground-based IAPs.**

In past studies the FAA had used 20 NM as a reasonable access criteria with other cancelation procedures. After review the group validated this distance as reasonable access and not providing undue burden for the purposes of training.

In the "Additional factors" criteria, the flight training aspect and importance of retaining unique IAPs should be considered.

Recommendation 3c.	**The FAA should modify the title of those Notice of Proposed Rulemaking (NPRM)/Final Rules to better inform the public of what the notice is about. Proposed language would be: "Cancellation of Standard Instrument Approach Procedures as Part of National Procedure Assessment Initiative".**

The Federal Register NPRM/Final Rule announcing mass IAP cancellations uses the same language in the title as that of routine cancellations that are published several times per month. The standard language (Standard Instrument Approach Procedures, and Takeoff Minima and Obstacle Departure Procedures;

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[12] According to the 2016 Draft Performance-Based Navigation (PBN) NAS Navigation Strategy, resiliency is the ability of the NAS to maintain both safety and an acceptable level of service during system failure scenarios or degraded facility conditions, and to prevent or mitigate impact to air traffic operations.

Miscellaneous Amendments) fails to properly identify this notice as being unique from the routine notice. Additional publicity by the FAA should be brought to these activities to encourage users to read the FAA's reasoning and to comment. Additionally, attention should be brought via a FAA Safety Team (FAAST) Blast or some other type of public notice such as a press release.

MLS and TLS Procedures

Recommendation 4. Remove Microwave Landing System (MLS) and Transponder Landing System (TLS) procedure categories.

These are two procedure types in the FAA's inventory that have zero procedures. These procedures are not expected to be used in the future.

SDF Procedures

Recommendation 5. Consider remaining SDF procedures for cancellation.

There are few Simplified Directional Facility (SDF) procedures remaining in the NAS. As of October 2015, there were only six remaining. The Task Group did not believe SDF procedures were needed any longer in the NAS.

PAR and ASR Procedures

Recommendation 6a. Review PAR and ASR procedures at civilian only facilities for cancellation.[13]

Precision Approach Radar (PAR) and Approach Surveillance Radar (ASR) procedures represent approximately 1% of all IFPs in the NAS. The Department of Defense maintains a wartime requirement to remain current on these procedures. Joint civilian/military facilities indicate that such procedures are used primarily for military purposes, such as military practice approaches. However, not all existing PAR or ASR procedures are at joint use facilities. Initial analysis by the Department of Defense suggests about 84 out of 221 ASR procedures may fit in this category. An additional 16 may be joint FAA/US Customs procedures.

Recommendation 6b. FAA should engage rest of government (Department of Defense (DoD), Customs and Border Patrol (CBP), etc.) to evaluate necessity of PAR and ASR procedures at joint use facilities.

While the DoD maintains a wartime readiness requirement for ASR and PAR procedures, it is still worthwhile for the FAA and DoD to periodically collaborate to assess whether the right mix of ASR and PAR procedures exist across the NAS to enable the DoD's proficiency.

Recommendation 6c. If any procedures are maintained, including but not limited to PAR or ASR, FAA must maintain training and currency of controllers to offer the procedure. If the Facility cannot provide the procedure due to training, the FAA should NOTAM those procedures out of service until such time that staff is trained.

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[13] Note that cancellation of an ASR procedure would also remove a corresponding circling procedure.

Currently there may be civilian facilities in the NAS with published PAR or ASR procedures but no air traffic controllers certified to clear aircraft on these approaches given the infrequency of use. This creates potential risk and uncertainty to the operator as to whether a given procedure is available to fly.

PBN Instrument Approach Procedures

The PBN NAS Navigation Strategy recommends the replacement of ground-based IAPs with PBN IAPs and the further proliferation of PBN IAPs to those runways ends not already served by a PBN procedure. The benefits of PBN, when compared to legacy ground-based approaches, include greater procedure design flexibility, more efficient routing, the potential for lower minima and reduced costs. When analyzing the opportunity for developing a national strategy of removing redundant PBN IAPs from the NAS, several constraints were identified which limited the logic to define NAS-level PBN procedure reduction criteria. The issues included:

- **PBN NAS Navigation is a priority for the NextGen NAS**

RNAV (GPS) procedures are intended for use at all airports. RNAV (RNP) (Required Navigational Performance) procedures are intended based on proximity to terrain, obstacles, special use airspace (SUA) or airspace/procedure considerations. Finally, there is a general intent to reduce use of and reliance upon ground based procedures throughout the NAS.

- **Each type of PBN procedures has value. Specifically:**
    - Lateral Navigation (LNAV) LoMs are critical for circling procedures and aircraft not equiped for vertical guidance.
    - LNAV/ Vertical Navigation (VNAV) provide vertical guidance for non-Wide Area Augmentation System (WAAS) aircraft.
    - Localizer Performance with Vertical Guidance (LPV) can provide the lowest minima with vertical guidance (WAAS required).
    - Localizer Performance (LP) approaches can provide the lowest minima if LPV approaches are not possible (WAAS required).
    - RNP (RNP AR) approaches can provide the lowest minima in areas of high terrain/obstructions, and they offer increased efficiency in high traffic environments.
    - RNAV (GPS) Precision Runway Monitor (PRM) offer increased efficiency at certain airports.
- **Not every operator can fly every type of RNAV procedure**

For example, some General Aviation may not be capable of flying RNAV (RNP) procedures, while most commerical airlines do not have equipage to operate LPV/LP lines of minima.

Recommendation 7a. **Flight Procedures Teams (FPTs), in collaboration with other appropriate organizations in the FAA, should examine whether there are any redundant PBN instrument approach procedures and lead any requests for cancellation.**

The various types of procedures required for the different operators in the NAS and the importance of PBN to future NAS operations require extra dligence when considering the cancellation of PBN procedures. The NPA Task Group believes there may be obvious cancellation candidates in the PBN category, such as overlay approaches. All air traffic control facilities should evaluate instrument flight

procedures (IFPs) within their area of jurisdiction for utilization and redundancy. IFPs determined to be underutilized and/or redundant should be coordinated with the appropriate Flight Procedures Team for cancellation through the RAPT process. Additionally, the FPTs should evaluate procedures for cancellation anytime they are scheduled to be amended.

Despite the importance of PBN to the future of the NAS, it is also a very large category of procedures and local, targeted examination of procedures remains worthwhile.

Recommendation 7b.	**Continue to replace GPS stand-alone procedures with RNAV (GPS) procedures that offer better minima and are not predicated on design criteria for ground-based procedures.**

GPS stand-alone procedures are in the process of transitioning from their original format to current naming conventions. Such efforts should continue throughout the NAS.

Standard Instrument Departures (SIDs) and Standard Terminal Arrivals (STARs)

Standard Instrument Departures and Standard Terminal Arrivals include RNAV and conventional procedures. While SIDs/STARs only make up about 5% of the total count of IFPs, these procedures are directly connected with national programs such as VOR MON and Metroplex. For SIDs/STARs, the Task Group started with a review of the FAA's recent efforts to assess unused or underutilized procedures. This effort, referred to as the Review, Refine and Remove (RRR) effort, examined the utilization of SID/STAR procedures across the NAS and identified candidate procedures for removal or refinement. The RRR effort was developed as part of the FAA's strategic efforts to "right-size" the NAS. The RRR concept consisted of three options:

- REVIEW: Using available data, review procedure use.
- REFINE: If the procedure is used, but could be improved, refine it.
- REMOVE: If the procedure is not used, remove it.

RRR was executed by a collaborative team called the Procedure Review Refine Remove Team (PRRRT). The PRRRT was formed in late 2013 and was active through the end of 2014. The PRRRT's initial focus was to examine both RNAV and conventional SIDs and STARs. In its active period, the PRRRT completed a review of CONUS SIDs and STARs, one service area at a time. The PRRRT used a three step approach:

- ANALYZE: Determine how many flights file and fly the SID or STAR using MITRE's PBN Dashboard data and complete initial "bucketing" of the procedures based on objective criteria. Based on an estimate of how often the procedure was filed, it was identified as a candidate for removal or refinement, or as requiring no action.
- VALIDATE: The initial bucketing was shared with the Service Center and Facilities, along with additional PDARS track data. Facilities were asked to validate the initial classification. All procedures that the operational facilities concurred with removing were forwarded to the next step.

- RECOMMEND: The set of removal candidates with facility concurrence was forwarded to the RAPTs for removal from the NAS.

The PRRRT analysis process identified several hundred candidate procedures, but after Facility validation and review, only 70 SIDs and STARs were recommended for removal (corresponding to 158 airport-specific procedures).

This Task Group examined the approach used in the ANALYZE step of the PRRRT process in developing the recommendations for cancellation criteria. In this step, the PRRRT used a combination of objective data and subjective inputs, but relied primarily on estimates of procedure usage derived from PBN Dashboard data. The PRRRT applied a usage metric[14] that estimated a procedure's frequency of use. The Task Group identified several concerns with usage percentage as the primary criteria:

- Underlying data quality and consistency: Several data quality issues were discussed, specifically the accuracy and operational relevance of the available data. One of the most significant accuracy concerns is the lack of accurate data on procedures that do not appear in flight plans or flight plan amendments, such as vector SIDs. The PRRRT identified this as a major issue in that the data did not reflect the reality of the usage as seen by ATC facilities. Therefore, facilities became very suspect of the data, questioning any conclusion based on it, and making the usage data operationally irrelevant. It was identified that the FAA and MITRE are aware of these limitations in the PBN Dashboard data, and that they are exploring corrective action.
- Percentage threshold: The PRRRT applied a percentage threshold to identify whether a procedure was a candidate for removal. Any procedure that had less than 5% usage was considered as a candidate. While this type of threshold may help manage workload by filtering out the procedures that are routinely and/or regularly used, the value of 5% for all locations was considered arbitrary.
- Usage as stand-alone criteria: Along with data accuracy and relevance issues, the Task Group had significant concerns about usage as stand-alone criteria for SID/STAR removal. Primarily, this type of data cannot sufficiently reflect the fact that some procedures, while utilized minimally, are of high operational value when needed.

The Task Group concluded that usage data should be used to inform and help identify potential procedures for consideration within the cancellation process, but not as a singular criterion as usage is not the only reason to maintain a procedure. A minimum threshold of utility over time is recommended, and the FAA should determine this threshold. Data sources used for this usage evaluation must be accurate and operationally relevant.

Given the concerns with data accuracy and relevance, the Task Group turned its focus to the information gained from the ATC facilities during the VALIDATE step of the PRRRT process. The Task Group reviewed the operational input from the ATC facilities provided as an explanation or justification to the PRRRT for

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[14] PRRRT procedure usage percentage = estimate of the number of flights that filed any given SID or STAR divided by the total number of arrivals or departures, over a 16 month period

maintaining procedures that the data had identified as potentially underutilized. Several responses and justifications were documented from the facilities, including:

- The procedure is utilized, but is not represented in the data due to the procedure not appearing in the flight plan (e.g., vector SID).
- The procedure is the only procedure at that airport.
- The procedure is a special event procedure (e.g. The Master's Golf Tournament).
- The procedure is a noise abatement procedure.
- The conventional procedure is required for non-RNAV aircraft.
- The procedure is primarily a transition for a satellite facility.
- The procedure is a Weather/SWAP procedure.

Using this information and other input from its membership, the Task Group developed the criteria for SID/STAR removal in the figure below. As part of the FAA's development of the PBN NAS Navigational Strategy document, consideration should be given to incorporating these recommendations for reducing the number of redundant SIDs and STARS.

Recommendation 8.	**Identify candidate SIDs/STARs for cancellation according to the criteria in the figure below.**

Figure 6 Criteria for identifying candidate SIDs/STARs for cancellation
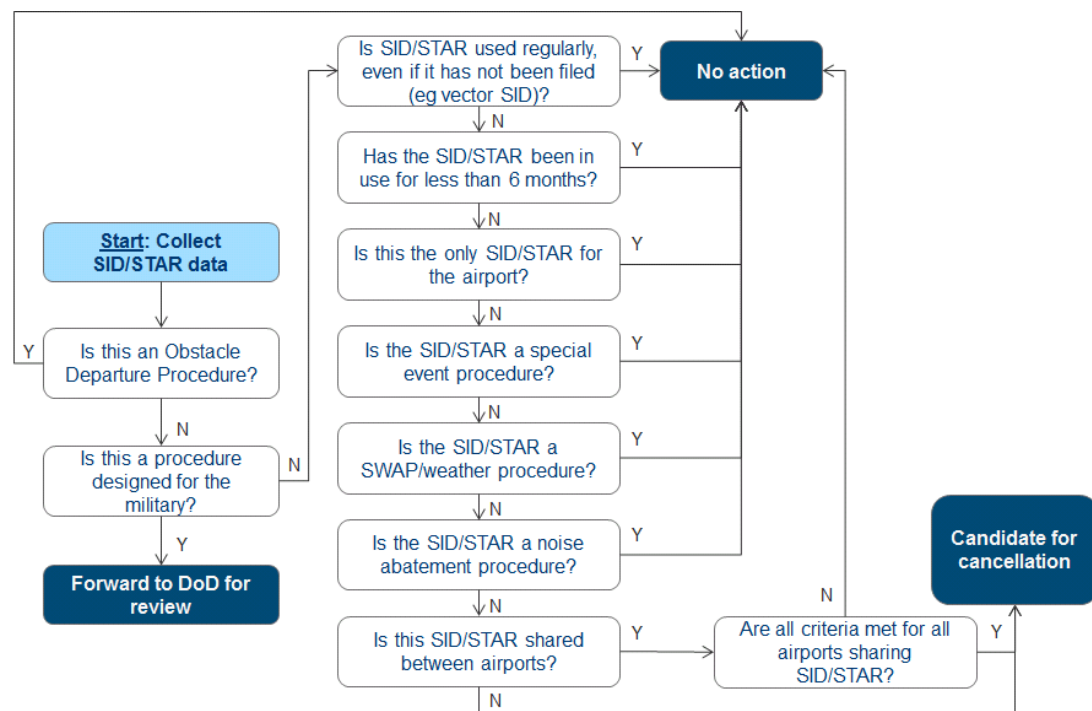
While the figure depicts strict "Y" or "N" decisions on the last step, there may be SIDs/STARs that are "maybes." Given this potential circumstance, the FAA may want to utilize a NOTAM to designate the SID/STAR as "ATC Assigned Only" as an initial step to test whether full cancellation is warranted.

Recommendations on the Process for Procedure Cancellation

The Task Group examined the processes undertaken by the effort to cancel ground-based IAPs as well as the PRRRT team's effort to cancel SIDs and STARs. In reviewing these efforts, the group recommended that both the regulatory and non-regulatory paths should follow a similar conceptual approach as listed below:

1) Centrally identify objective criteria to identify procedures for cancellation.
2) Apply these criteria to generate cancellation candidate lists.
3) Review candidate procedures with applicable ATC facilities and flight operators.
4) Execute cancellation according to the existing process for the procedure type.

The clear dichotomy between the cancellation of IAPs and that of SIDs and STARs is the regulatory requirement for public comment for IAPs. Upon considering the experience of the NPA and PRRRT efforts, the Task Group proposed the following concept for a repeatable process for procedure cancellation:

- The first step of criteria development is best handled as a Headquarters activity. Criteria should be similar across the NAS and should be defined centrally.
- Application of these criteria to identify candidates for cancellation is best handled by local ATC facilities with the support of Service Center personnel. Local facilities include Centers, Terminal Radar Approach Control Facilities (TRACONs) and Towers. Whether discussing SIDs and STARs or IAPs, personnel from local facilities are best suited to evaluate the importance and value of procedures.
- Local facilities are resource constrained, so the Service Centers can play a critical role by owning the process of local evaluation of procedures and walking the local facilities through the process.
- There are existing processes for cancellation with the FPTs (SIDs/STARs) and AJV-5 (IAPs) that should continue to be utilized for ongoing procedure cancellation.

Recommendation 9a. Evaluation of procedures should be ongoing and occur on a recurring basis in accordance with the figure below.

Figure 7 Proposed Process for Procedure Cancellation
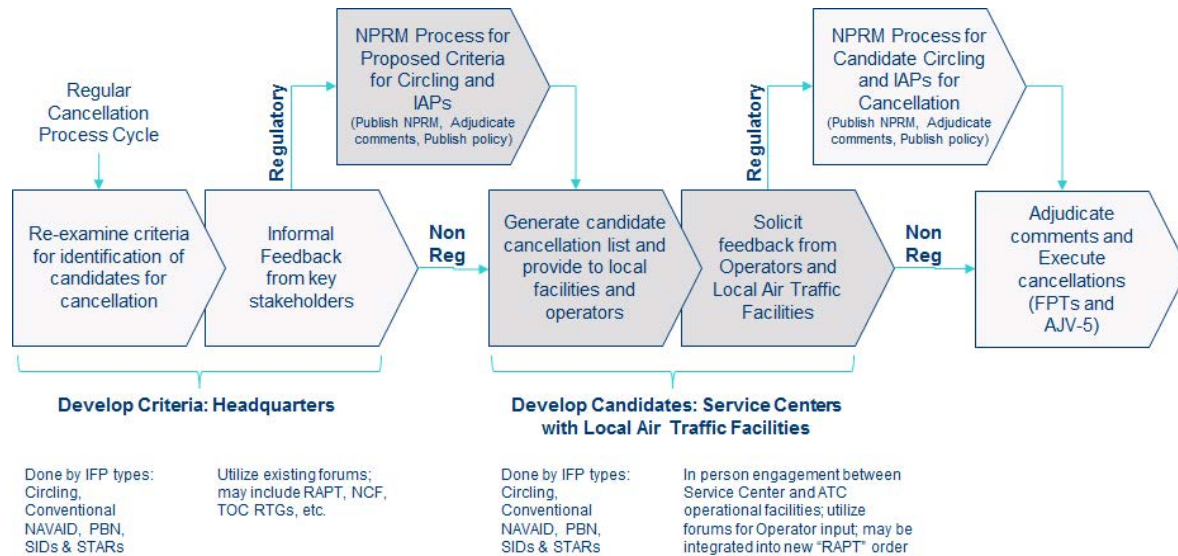
The Task Group recognizes that the need for this should diminish over time as the NAS evolves to full PBN capability. However, ground-based procedures will remain in the NAS for the foreseeable future and will be part of future cancellation efforts.

The Task Group does not suggest a specific frequency to execute the process but recognizes that conducting such an evaluation too frequently will be counterproductive. The three Service Centers may consider cycling through one of its enroute Centers' IFPs each year and then moving to another facility the next year. This approach would maintain a continuous stream of activity in the area of cancellation for each Service Center.

Recommendation 9b. Removal criteria should be periodically re-examined by Mission Support or appropriate national office.

The NAS is continuously evolving so the criteria utilized today to identify candidates for cancellation may not be applicable in the future. Hence, the criteria should be reassessed periodically.

Recommendations on the Outreach for Procedure Cancellation

Recommendation 10a.	Both local ATC Facilities and Operators should be engaged into the regulatory and the non-regulatory cancellation processes.

The greatest shortcoming of both removal processes was the lack of interaction between ATC or users depending on regulatory or non-regulatory paths. In the PRRRT process (non-regulatory), air traffic facilities were involved but not operators. In the Ground Based IAP cancellation process (regulatory), operators had opportunity to comment but air traffic facilities were not involved. Both are critical partners in effective transition of the NAS and should be involved in both tracks. An open question remains as to what the most effective mechanism would be for involving operators.

Recommendation 10b.	Recommend the new RAPT order include a process step for flight operators to offer comment/feedback on cancellation of SIDs and STARs.

The Task Group recommends that the forum for operator input be an an existing process or industry forum. The process of communication and feedback should not just be electronic, such as through an email distribution list. Additionally, proposed SIDs/STARs for cancellation should be communicated to operators early enough so they can review the content and provide feedback to the FAA before final decisions have been made.

Recommendation 10c.	Engaging local ATC facilities for feedback is most effectively accomplished in person in order to guide facilities through the process and discussion.

As noted earlier, local ATC facilities have the greatest knowledge to offer meaningful feedback on proposed candidate lists. However, these facilities are resource constrained. The Service Center should take the lead on engaging local facilities and utilize defined in-person workshops to solicit local facility feedback. Additionally, if a Service Center is gathering facility input on Circling Procedures, IAPs and SIDs/STARs, the in-person engagement should be done at one time.

Recommendation 10d.	The key air traffic facility involved in creation of a procedure should participate in its cancellation.

Finally, if a facility was involved in the original development of a procedure, it should also be involved in its cancellation. Historical background information may be helpful in making cancellation decisions. Key facilities for STARs are typically the Air Route Traffic Control Center (ARTCC), while for SIDs and IAPs, they are typically the TRACON or the appropriate ARTCC if it is the primary air traffic service provider.

Additional Recommendations

The Task Group recognizes that this final category of recommendations is on the edge of the original scope of the task. However, the Task Group elected to include these recommendations with the request that the FAA give these recommendations consideration as they apply to the overall theme of cancellation of procedures:

Recommendation 11a.	Develop a process to ensure any procedures associated with closed airports or decommissioned/restricted NAVAIDs (VORs, NDBs) are removed or amended as appropriate.

The infrastructure at airports and in surrounding communities is constantly changing and can have lasting impacts on IFPs and their utility. Periodic reviews of NOTAMs and other aeronautical data or engagement of key personnel as part of the coordination process will enhance timely cancellation or modification of associated IFPs.

Recommendation 11b.	Establish a national policy to motivate procedure cancellation.

Motivating procedure cancellation is challenging and there is no obvious incentive for local facilities to cancel procedures. For the sake of consistency of cancellation across facilities throughout the NAS, consideration should be given to a national policy and/or defined incentives for local air traffic facilities to have a higher level of engagement with this process.

Recommendation 11c.	Further augment FAA's capacity for procedure maintenance and development through contract support (as needed and subject to availability of budget).

The Task Group recognizes the challenges to resources within the FAA and the Federal Government at large. However, the utilization of contract resources has proven to be of value in the past, not only to enhance capacity to maintain and develop procedures but also to serve as a training ground to develop the "bench" that will serve as future full time procedure team members within the FAA.

Recommendation 11d.	Continue to invest in automation and technology improvements that have the potential to improve the FAA's productivity in procedure maintenance and development.

The Task Group is aware that there are promising technology options, such as modifications to the TARGETs software, to enhance the productivity of procedure maintenance. Such technologies should also receive close consideration in addition to the cancellation efforts. Technology improvements will clearly drive additional cost upfront that will deliver value over time. With the right investments in future automation, near-term cost savings should enable further development of the NAS.

Appendix A: Tasking Letter

FEB 0 4 2015

Ms. Margaret Jenny
President
RTCA, Inc.
1150 15th Street NW
Suite 910
Washington, DC 20036

Dear Ms. Jenny:

The FAA seeks to ensure an effective transition from ground-based airways, routes and instrument flight procedures to greater availability and use of satellite-based routes and procedures while still maintaining safety. Building from past, smaller-scale efforts, the National Procedures Assessment (NPA) Initiative seeks to establish a repeatable process and plan to cancel redundant or excess procedures and reduce the maintenance costs associated with them.

Currently, there are two processes or tracks used for the publication of the procedures and routes in our navigation structure: (1) Regulatory, which includes airways, routes, and instrument flight procedures (IFPs) that require rulemaking action before they are effective; and (2) Non-regulatory, which includes Standard Instrument Departures and Standard Terminal Arrivals (SIDs and STARs) and don't require rulemaking. Cancelation of procedures also follows these same two track methods.

The FAA based the process in the NPA Initiative which follows the regulatory track, on initial cancellation criteria received from the Flight Safety Foundation in 2011 and additional criteria solicited through public comment in the Federal Register in 2013/14. In June 2014, final criteria were published in the Federal Register. Using these final criteria, FAA focused on NDB and VOR procedures and has identified over 700 for cancellation. This list will be posted in the Federal Register before removal.

The non-regulatory track has also developed a process to review utilization data to identify both conventional and PBN candidate SIDs and STARs. Candidate procedures are further studied in the Service Center for facility input. The process does not include publication or comment via the Federal Register for public input. Existing collaborative processes like Metroplex projects are used to engage and coordinate with industry.

FAA requests feedback and recommendations from the TOC in key areas noted below. Specifically, FAA requests the TOC:

1. Review and validate the current NPA Initiative assumptions and criteria developed to date for both the regulatory and non-regulatory tracks. If changes are recommended, please include the range of options/alternatives considered.
2. Review the proposed FAA implementation plans for both tracks and provide feedback and recommendations as needed.
3. Assess the effectiveness of the outreach planned and accomplished by FAA and make any needed recommendations for improvement.
4. Provide recommendations on what assumptions and criteria should be considered to advance the NPA Initiative beyond its current scope to encompass the remaining conventional and PBN routes and procedures. Please provide industry perspective on whether existing implementation plans and outreach would suffice for an expanded NPA Initiative. If there are barriers to getting to such recommendations, please describe them. Please provide recommendations on the priority of further future actions. In other words, what procedures should FAA look at next?

FAA believes the timing of this work is critical. We currently have over 14,000 procedures in the inventory with hundreds of additional procedures planned this fiscal year. Removing underutilized or unneeded procedures reduces not only FAA maintenance costs but frees up personnel to work on higher priority procedures. It also reduced unnecessary controller and pilot proficiency training requirements. FAA will provide subject matter experts and needed documentation to the TOC on request and looks forward to the results of this important work.

FAA requests this work be completed by 4th Quarter FY2015 TOC meeting. Once the task group is established, FAA will work with TOC leadership to determine the schedule for interim deliverables and milestones.

Sincerely,

Elizabeth L. Ray
Vice President, Mission Support Services
Air Traffic Organization

Appendix B: Members of the National Procedure Assessment Task Group

Organization	Individual Participant
Air Line Pilots Association	Marc Henegar
	Darrell Pennington
Air Wisconsin	**Michael Perrizo (Co-Chair)**
	Michael Stromberg
Aircraft Owners and Pilots Association	Rune Duke
	Melissa Rudinger
American Airlines	Brian Townsend
DoD Policy Board on Federal Aviation	Steve Madero
Federal Aviation Administration	Mark Adams
	Jose Alfonso
	Wayne Eckenrode
	Bill Fernandez
	Danny Hamilton
	Gerald Lynch
	Robert Novia
Landrum and Brown	Lee Brown
National Air Traffic Controllers Association	Dennis Kelly
National Association of State Aviation Officials	**Randy Burdette (Co-Chair)**
	Vernon Carter
National Business Aviation Association	Rich Boll
	Bob Lamond Jr
RTCA	Trin Mitra
Southwest Airlines	Perry Clausen
	Gary McMullin
The MITRE Corporation	John Brandt
	Howard Callon
United Airlines	Glenn Morse

Appendix C: Case Studies on Application of Circling Criteria

To validate the criteria for identifying Circling procedure candidates for cancellation, nine airports of various size and purpose were evaluated as case studies. The application of the criteria revealed an average of 60% of circling procedures published at the case study airports would be forwarded for further circularization and consideration for cancellation. Assumptions for this analysis include the following:

- Category A minima used for comparison
- All circling lines of minima listed for the airport
- Red text indicates candidate for removal
- Percentage indicates amount of lines of minima at airport proposed for removal
- October 26, 2015 MON airport list used
- National Simulator Program IAP listed for retention

PDK (50% of Circling LoMs candidates for cancellation)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
ILS OR LOC RWY 21L	1500-1	502	Candidate for cancellation - solicit comments
RNAV (GPS) Y RWY 21L	1500-1	502	Retained according to criteria 2
VOR/DME RWY 21L	1580-1	582	Candidate for cancellation - solicit comments
VOR/DME-D	1600-1	602	Retained according to criteria 4/5/7

GAI (33%)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
RNAV (GPS) -A	1020-1	481	Retained according to criteria 4/7
RNAV (GPS) RWY 14	1020-1	481	Candidate for cancellation - solicit comments
VOR RWY 14	1200-1	662	Retained according to criteria 5

JFK (58%)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
ILS OR LOC RWY 04L	640-1	627	Simulator IAP/Criteria 5
			Either ILS 4L or 4R, depending on local preference, should be retained (Crit 5)
RNAV (GPS) Y RWY 04L	640-1	627	Retained according to criteria 2
VOR RWY 04L	640-1	627	Candidate for cancellation - solicit comments
ILS OR LOC RWY 04R	640-1	627	Simulator IAP/Criteria 5
RNAV (GPS) Y RWY 04R	640-1	627	Retained according to criteria 2
VOR RWY 04R	640-1	627	Candidate for cancellation - solicit comments
ILS OR LOC RWY 13L	680-1	667	Candidate for cancellation - solicit comments
ILS OR LOC RWY 13L - PRI	640-1	627	Candidate for cancellation - solicit comments
RNAV (GPS) Z RWY 13R	640-1	627	Candidate for cancellation - solicit comments
ILS OR LOC RWY 31L	640-1	627	Candidate for cancellation - solicit comments
RNAV (GPS) Y RWY 31L	640-1	627	Retained according to criteria 2
VOR RWY 31L	640-1	627	Candidate for cancellation - solicit comments
ILS OR LOC RWY 22L	640-1	627	Candidate for cancellation - solicit comments
VOR/DME RWY 22L	640-1	627	Candidate for cancellation - solicit comments
RNAV (GPS) Y RWY 22L	640-1	627	Retained according to criteria 2

ILS RWY 22R	640-1	627	Candidate for cancellation - solicit comments
RNAV (GPS) RWY 22R	640-1	627	Retained according to criteria 2
ILS OR LOC RWY 31R	640-1	627	Candidate for cancellation - solicit comments
RNAV (GPS) Y RWY 31R	640-1	627	Retained according to criteria 2

TEB (75%)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
ILS OR LOC RWY 06	760-1	751	Candidate for cancellation - solicit comments
ILS OR LOC RWY 19	760-1	751	Retained according to criteria 2/5/7
RNAV (GPS) X RWY 06	760-1.25	752	Retained according to criteria 2
RNAV (GPS) Y RWY 06	800-1	791	Candidate for cancellation - solicit comments
RNAV (GPS) Y RWY 19	960-1.25	952	Candidate for cancellation - solicit comments
VOR/DME RWY 06	760-1	751	Candidate for cancellation - solicit comments
VOR/DME-B	800-1	791	Candidate for cancellation - solicit comments
VOR RWY 24	760-1	751	Candidate for cancellation - solicit comments

FDK (66%)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
ILS OR LOC RWY 23	1020-1.5	717	Retained according to criteria 1/5 (MON)
RNAV (GPS) RWY 05	900-1	597	Candidate for cancellation - solicit comments
RNAV (GPS) Y RWY 23	900-1	597	Retained according to criteria 2/7
RNAV (GPS) Z RWY 23	1020-1	717	Candidate for cancellation - solicit comments
VOR-A	1360-1.25	1057	Candidate for cancellation - solicit comments
VOR-A - NIORT	920-1	617	Candidate for cancellation - solicit comments

PWA (57%)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
ILS OR LOC RWY 17L	1780-1	480	Candidate for cancellation - solicit comments
ILS OR LOC RWY 35R	1780-1	480	Candidate for cancellation - solicit comments
RNAV (GPS) RWY 17L	1780-1	480	Retained according to criteria 2
RNAV (GPS) RWY 35R	1780-1	480	Retained according to criteria 2
VOR RWY 17L	1780-1	480	Candidate for cancellation - solicit comments
VOR RWY 35R	1780-1	480	Candidate for cancellation - solicit comments
VOR-A	1780-1	480	Retained according to criteria 4/5/7

LGA (75%)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
ILS OR LOC RWY 04	640-1	619	Candidate for cancellation - solicit comments
ILS OR LOC RWY 04 - WARIN	640-1	619	Candidate for cancellation - solicit comments
ILS OR LOC RWY 13	800-1	779	Candidate for cancellation - solicit comments
ILS OR LOC RWY 13 - COROR	640-1	619	Candidate for cancellation - solicit comments
ILS OR LOC RWY 22	640-1	619	Candidate for cancellation - solicit comments
RNAV (GPS) RWY 13	640-1	619	Retained according to criteria 2

RNAV (GPS) RWY 31	640-1	619	Candidate for cancellation - solicit comments
RNAV (GPS) Y RWY 04	640-1	619	Retained according to criteria 2
RNAV (GPS) Y RWY 22	640-1	619	Retained according to criteria 2
RNAV (GPS)-B	640-1	619	Candidate for cancellation - solicit comments (RWY 22)
LOC RWY 31	640-1	619	Retained according to criteria 5
LDA-A	640-1	619	Candidate for cancellation - solicit comments (RWY 22)
VOR/DME-G	640-1.25	619	Candidate for cancellation - solicit comments (RWY 22)
VOR/DME-H	640-1	619	Candidate for cancellation - solicit comments (RWY 13)
VOR RWY 04	640-1	619	Candidate for cancellation - solicit comments
VOR-F	1000-1.25	979	Candidate for cancellation - solicit comments (RWY 4)

BIH (60%)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
RNAV (GPS) Y RWY 12	6600-1.25	2476	Candidate for cancellation - solicit comments
RNAV (GPS) Z RWY 12	6420-1.25	2296	Retained according to criteria 2
LDA/DME RWY 16	6340-1.25	2216	Retained according to criteria 5/7
VOR/DME OR GPS-B	7300-1.25	3176	Candidate for cancellation - solicit comments
VOR OR GPS-A	7400-1.25	3280	Candidate for cancellation - solicit comments

TIP (66%)

Procedure Name	MDA/Vis	HAA	Assessment Based on Circling Criteria
RNAV (GPS) RWY 9	1280-1	542	Candidate for cancellation - solicit comments
RNAV (GPS) RWY 18	1280-1	542	Candidate for cancellation - solicit comments
RNAV (GPS) RWY 27	1240-1	502	Retained according to criteria 2
RNAV (GPS) RWY 36	1220-1	482	Candidate for cancellation - solicit comments
VOR RWY 27	1300-1	563	Candidate for cancellation - solicit comments
VOR RWY 27 - DME	1220-1	483	Retained according to criteria 5

Appendix D: FAA's Final Policy on Criteria for Ground Based IAP Cancellation

Issued in Washington, DC on June 23, 2014.

Albert R. Spence,

FAA Assistant Information Collection Clearance Officer. IT Enterprises Business Services Division, ASP–110.

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BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Docket No. FAA–2013–0265]

Policy for Discontinuance of Certain Instrument Approach Procedures

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of policy; disposition of comments.

SUMMARY: This action adopts with minor modification, the policy proposed in the **Federal Register** on August 2, 2013. Under this policy, the FAA establishes the criteria to identify certain non-directional beacon (NDB) and very high frequency (VHF) omnidirectional radio range (VOR) instrument approach procedures that can be considered for cancellation. Additionally, the FAA responds to comments received during the comment period on the notice of proposed policy.

FOR FURTHER INFORMATION CONTACT: For questions concerning this action, contact Wayne Eckenrode, Aeronautical Navigation Products, AJV–3, Instrument Flight Procedures Efficiency Group, Manager, Federal Aviation Administration, Air Traffic Organization, 4500 Mercantile Plaza Drive, Fort Worth, TX 76137; telephone (202) 494–8898, email *AMC-ATO-IFP-Cancellations@faa.gov.*

Background

Right-sizing the National Airspace System (NAS) is an integral part of the FAA's commitment to deliver the benefits of the Next Generation Air Transportation System (NextGen) through enhanced technology, enhanced capabilities, and more efficient, streamlined services. Focus on improvements in satellite-based navigation based on Global Positioning System (GPS) technology has facilitated the implementation of a large number of Performance Based Navigation (PBN) Instrument Approach Procedures (IAPs) into the NAS. These PBN procedures charted as RNAV (GPS) and RNAV (RNP) IAPs, improve the safety and efficiency of the NAS by providing more precise, repeatable flight paths to the runway. The total number of procedures

in the NAS has nearly doubled over the past decade, as legacy procedures based on older, ground-based technology, are maintained alongside the newer, satellite-based procedures. In some cases, the older procedures are redundant or obsolete, and maintaining them unnecessarily increases FAA costs, as well as creates the need for air traffic controllers to train and be proficient on procedures that are not used or needed. Pilots must also maintain proficiency on these procedures and, in some cases, memory limitations in the Flight Management Systems (FMSs) in their aircraft result in the inability to load all the data needed to support the procedures. Removing certain redundant or underutilized IAPs will increase the safety and efficiency of the NAS by streamlining user access and FAA services, allowing the FAA to focus on delivering greater benefits through new technology.

In September 2010, the FAA awarded a grant to the Flight Safety Foundation, to research and provide independent insight on how the FAA should eliminate redundant or underutilized Instrument Approach Procedures (IAPs). The Flight Safety Foundation's study and recommendations were developed based on interviews and surveys of FAA personnel, and key airspace stakeholders. Among those interviewed were, Aircraft Owners and Pilots Association (AOPA), Air Line Pilots Association, International (ALPA), Air Transport Association (ATA), National Business Aviation Association (NBAA), Regional Airline Association (RAA), and the U.S. Air Force. The study formed the basis for the notice of proposed policy and request for comment (78 FR 47048) published in the **Federal Register** on August 2, 2013. The notice sought comments on the proposed criteria the FAA would utilize to determine which NDB and VOR IAPs could be considered for cancellation.

Summary of Comments

The FAA received a total of 14 comments from individuals, the Department of Defense (DoD), AOPA, the Maryland Aviation Administration, the Wahoo Airport Authority, and SkyWest Airlines.

Several of the comments received concerned the ability to train pilots on NDB or VOR IAPs if the ground-based procedures at an airport were cancelled. AOPA asserted that most flight instructors and pilots rely very heavily on ground-based navigational aids for initial and recurrent instrument flight training activities.

This policy will not reduce the ability to train pilots on NDB or VOR IAPs.

Under this adopted policy, one existing ground-based IAP procedure will remain at each airport under this policy.

Three commenters were concerned with aircraft operations at an airport during periods of inclement weather if the ground-based procedure to a particular runway was cancelled. AOPA stated that consideration needs to be given to the individual airport operation and if there is a predominant or exclusive general aviation runway at a particular airport, the procedure offering the lowest approach minimums may not provide the greatest access. Based on this situation, AOPA asserted that it may be necessary to preserve the IAP to the general aviation runway for use during instrument training in visual meteorological conditions.

The criteria adopted in this notice ensure that an airport does not lose IAP capability to any runway that already has a published IAP. Additionally, the FAA will consider runway usage and local weather conditions when identifying candidate IAPs for cancellation.

Several commenters questioned whether the FAA will consider community needs for goods and emergency services at certain locations with limited access.

The adopted criteria ensure that at least one RNAV IAP and one ground based IAP will remain published at airports that already have them.

Individuals, AOPA, Wahoo Airport Authority, Maryland Aviation Administration, and SkyWest Airlines, submitted general comments concerning the decommissioning or discontinuance of NDBs and/or VORs.

The decommissioning or discontinuance of NDBs or VORs is beyond the scope of this action. The implementation of this policy will not decommission or discontinue the use of any facility, including NDBs and VORs. The purpose of this policy is to appropriately identify IAPs that can be cancelled.

The DoD commented that the FAA should explore additional methods to reduce costs of maintaining IAPs. The DoD stated that other methods to reduce costs may exist such as reducing the costs of flight checks which form a significant portion of the IAP maintenance costs.

The FAA will continue to examine ways to reduce operating costs associated with the maintenance of IFPs including reduction in flight check costs.

Many commenters expressed concern with GPS signal interruption, which emphasized, in their view, the need for redundant ground-based IAPs.

Commenters also noted some geographic areas in the NAS incur GPS signal interference more regularly than others due to U.S. Government testing.

Under this policy, the FAA will ensure that at least one ground based IAP will remain at each airport.

The FAA agrees that the adopted criteria must also consider GPS signal interference. Therefore, the FAA modifies this policy and adds the following as a factor to be considered: ''Airports located within an area routinely affected by GPS signal interference testing.''

The DoD stated that if IAPs at a civil airport are extensively utilized by military aircraft for training and/or proficiency, these IAPs should be retained. Additionally, the DoD suggested that DoD facilities should be added to the list of airports that are not considered for NDB or VOR IAP cancellations.

While this policy will not add DoD facilities to the list of airports that are not considered for NDB and VOR IAP cancellation, the FAA agrees to modify the policy so that IAPs used extensively by military aircraft for training and/or proficiency will remain in the National Airspace System.

Policy

After review and evaluation of the public comments received on the policy proposed in the **Federal Register** on August 2, 2013 (FAA–2013–0265), the FAA adopts the criteria for selecting potential IAPs for cancellation as proposed with two modifications based on the comments received. FAA adds the following to the list of consideration factors: ''Airports located within an area routinely affected by GPS signal interference testing'' and ''Extensive use by the military for training and/or proficiency.''

The NDB and VOR IAPs recommended for cancellation will be selected at airports using the adopted criteria. FAA notes that all airports having existing RNAV and ground-based IAPs will maintain at least one RNAV and one ground-based IAP under this initiative.

Instrument Approach Procedures are incorporated by reference into Title 14 of the Code of Federal Regulations part 97, subpart C, and are promulgated by rulemaking procedures. Once the FAA identifies IAPs that may be cancelled in accordance with the adopted policy noted above, the FAA will follow standard rulemaking procedures including a Notice of Proposed Rulemaking in the **Federal Register** containing the list of NDB and VOR IAPs recommended for cancellation.

The FAA will consider all public comments before issuing a Final Rule removing selected IAPs.

Airports considered for NDB or VOR IAP cancellation:

—All airports with an NDB IAP.
—All airports with a VOR/DME RNAV IAP, unless it is the only IAP at the airport.
—All airports with two or more ground-based IAPs and an RNAV IAP.
—All airports with multiple, redundant ground-based IAPs (e.g., three VOR procedures).

Additional factors for consideration in determining the list of potential candidates for NDB or VOR IAP cancellation:

—Prevailing wind runways.
—Prevailing runway alignment during adverse weather operations.
—Runways with a published ILS IAP and a ground-based IAP.
—For runways with multiple VOR and NDB IAPs consider IAPs with the lowest minimums (if minimums are within 20 feet of each other), and IAPs that allow for optimum use by all users.
—Airports located within an area routinely affected by GPS signal interference testing
—Extensive use by the military for training and/or proficiency.

Airports not considered for NDB or VOR IAP cancellations:

—Airports with only RNAV/RNP IAPs published.
—Airports with only one ground-based procedure.
—Airports will not be considered if cancellation would result in removing all IAPs from the airport.

Issued in Washington, DC, on June 19, 2014.

Abigail Smith,
Director, Aeronautical Navigation Products.
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Notice of Proposed Airport Access Restriction and Opportunity for Public Comment

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).
ACTION: Notice; Request for Comment.

SUMMARY: The Airport Noise and Capacity Act of 1990 (hereinafter referred to as ''the Act'' or ''ANCA'') provides notice, review, and approval requirements for airports seeking to impose noise or access restrictions on Stage 3 aircraft operations that become effective after October 1, 1990. 49 U.S.C. 47521 et seq. This notice is issued pursuant to ANCA and 14 CFR 161.315(b).

The Federal Aviation Administration (FAA) announces that it has determined the application for an airport noise and access restriction submitted by the Los Angeles World Airports (LAWA) for Los Angeles International Airport (LAX) under the provisions of 49 U.S.C. 47524 of the ANCA, and 14 CFR part 161, to be complete. The LAWA application seeks approval to adopt a new ordinance that would require all aircraft operators to comply with prevailing flows whenever LAX is in Over-Ocean or Westerly Operations from midnight to 6:30 a.m. The determination of completeness is not an approval or disapproval of the proposed airport access restriction. FAA will review the application, public comments, and any other information obtained under § 161.137(b) and issue a decision approving or disapproving the proposed restriction. FAA intends to issue its decision by November 8, 2014.

Public Comments: Interested parties are invited to file comments on the application. Comments are due 30 days after the publication of this notice in the **Federal Register**.

FOR FURTHER INFORMATION CONTACT: James Byers, Planning and Environmental Division, APP–400, 800 Independence Avenue SW., Washington DC 20591.

Email address: jim.byers@faa.gov. Comments on the application for the proposed noise and access restriction, including the environmental analysis, should be submitted in writing to this contact office.

SUPPLEMENTARY INFORMATION: On January 30, 2013 the Federal Aviation Administration (FAA) received an application from LAWA under 14 Code of Federal Regulations (CFR) Part 161 seeking a Stage 3 aircraft noise and access restriction at Los Angeles International Airport (LAX). The application was reviewed in accordance with 14 CFR 161.313(a), and was determined to be incomplete in the areas of Noise Exposure Maps (NEMs); Noise Study Area; Technical Data Supporting Noise Impact analysis; and Cost Benefit Analysis. Notice of this decision was sent to LAWA on March 1. On March 15, 2013, the FAA provided LAWA additional information regarding the type of information and analysis required to complete the application.