

# **Southern Departure Study**

Jackson Hole Airport

Study Input Taskforce Meeting

February 10, 2022



# Agenda

- Introduce Taskforce and Consultant Team
- How we got here
- Purpose of Study
- Purpose of Study Input Taskforce
- Summary

# Study Input Taskforce (SIT)

- Valerie Brown, Jackson Hole Airport Board – Taskforce Chair
- TJ McCann, Community Pilot
- Frank Durbian, US Fish & Wildlife
- Jeremy Barnum, National Park Service
- Todd Stiles, US Forest Service
- Sally Painter, ANPAC



# Consultant Team

## Project Organization



### SOUTHERN DEPARTURE PROCEDURE STUDY JACKSON HOLE AIRPORT

#### PROJECT TEAM

- MH Mead & Hunt
- FTE Flight Tech Engineering
- BNI BridgeNet International
- JV Aviation
- DW Design Workshop



**PROJECT PRINCIPAL**  
Ryk Dunkelberg, ESQ. MH



**PROJECT MANAGER**  
Kate Andrus, AICP, LEED GA MH



**FLIGHT PROCEDURES**  
Alec Seybold FTE



**FLIGHT PROCEDURES**  
Richard Scott FTE



**NOISE MODELING AND MONITORING**  
Paul Dunholter BNI



**AIR TRAFFIC CONSIDERATIONS**  
Greg Dyer, Jr. JV



**FACILITATOR**  
Bill Kane DW



# Taskforce Objectives

- Gain a common understanding of the physical, environmental, and regulatory context for operations at the Airport.
- Gain a common understanding of the history of flight operations and southern departure options used and considered in the past.
- Review the Airport's history of noise abatement as it relates to both northern and southern procedures for commercial and general aviation operations.
- Identify and prioritize possible improvements to southern departures that will reduce aircraft noise intrusion.
- Target August 2022 to provide findings to the Airport Board.



# Ground Rules

- Please be recognized by the facilitator when you wish to speak.
- We will hold questions to logical stopping points in the interest of maintaining an uninterrupted flow of information. We will try our best to avoid rabbit holes.
- We are constituted as a Taskforce whose job it will be to discuss southern departure options and prioritize potential for improvements.
- The Chairman of the Taskforce represents the Airport Board and is our conduit for presenting the findings going forward.



# House Keeping

- We will start and stop on time. Please be prompt and ready to go at the appointed start time. We will respect everybody's time and strive to live within the allocated meeting times.
- Seek first to understand and then to be understood.
- This is a cooperative working group—not an adversarial proceeding. Everyone will be heard, and all opinions and views will be respected.
- Remember to concentrate on the issue, not the person.
- Solutions which optimize for one group at the expense of others will not be carried forward—noise will not shift from one neighborhood to another.
- We will try to minimize acronyms where possible, but many cannot be avoided.





# Organization of Study Input Taskforce

- Anticipate 4 meetings over the 8-month period.
- Receive public comment at conclusion of each meeting and for two weeks thereafter at: [southerndepartureprocedurecomments@jhairport.org](mailto:southerndepartureprocedurecomments@jhairport.org).





# How we got here

- Airport and FAA instituted a noise abatement left turn in the early 80's.
- Due to terrain issues and updates to FAA standards and procedures, this was eliminated approximately 20 years ago.
- The Airport completed a 14 CFR Part 150 Study in 2019 that recommended implementation of the historic left turn, or similar using NexGen Technology. The Study also recommended new approaches from the north.
- FAA evaluated and designed, and then implemented the northern approaches in Dec 2021.

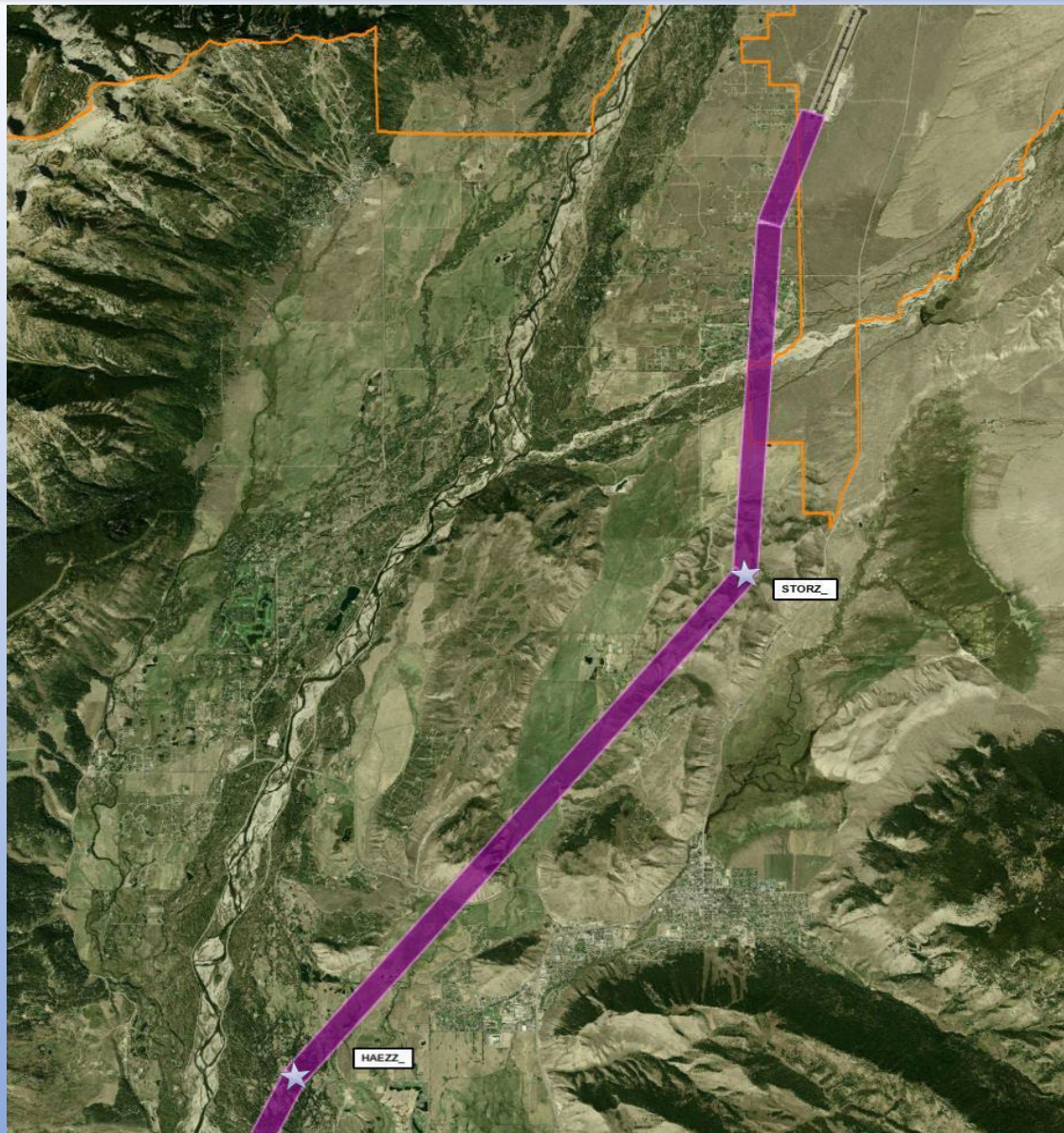


# How we got here

- In response to the southern departure, FAA developed a proposed procedure, the KICNE ONE. Per current criteria, they could not fully mirror the historic left turn.
- Airport requested that FAA pause implementation of KICNE ONE to allow for additional technical analysis and community outreach; therefore, the development of the taskforce.
- FAA requested any additional analysis be presented through their portal with a target of September 2022.



# Graphic of KICNE ONE Proposed Departure







# Southern Departure Parameters

- FAA criteria and protocols must be followed.
- Only procedures to be considered are those that could benefit the entire community and are likely to be flown.



# Study Process

## Phase 1: Preliminary Analysis

Tasks: Review of KICNE ONE, ALPIN Three, and TETON Three (existing procedures) to vet potential noise shifting with these procedures, noise modeling on procedure, first and second SIT meetings, noise education (website). Review & communicate FAA design limitations that must be adhered to.



## Phase 2: Development of Procedure Concepts

Tasks: Develop preliminary designs for a new conventional noise abatement departure procedure, and up to 2 special procedures, noise modeling/visualizations, coordination, third SIT meeting, updates to noise education (website), video production. If concepts show a noise benefit without a shift in noise, could then move forward with additional analysis.



## Phase 3: Refinement of Procedures

Tasks: Refinement of procedures based on routing feedback, fourth SIT meeting, documentation and application of plan for next steps. A special procedure could move forward if it would provide meaningful noise reduction without substantial shifting of noise. If a conventional procedure is determined to work, it will be submitted to the FAA. Determine if flight test should be conducted to assess benefit.



## End of Project: Submittal to FAA, if applicable - Schedule 8 months

Tasks: If a conventional procedure is found to benefit the community, it will be submitted to the FAA portal by the Sept. deadline. If only special procedures provide benefit, full special procedure development can proceed as a follow-on Task.

# Instrument Flight Procedures versus Visual Procedures

## *Why the focus on Instrument Procedures?*

- Standard Operating Procedures for Air Carriers, Charter Operators, and Corporate/Business jets require flights to be conducted under Instrument Flight Rules (IFR) regardless of weather conditions. This necessitates the development of Instrument Procedures rather than visual maneuvers.
- Because of the technological revolution in Flight Deck technology, Instrument Procedures provide unprecedented precision, fidelity, and safety otherwise unavailable to the Flight Crew.



# Flight Procedure Evaluation

- As the flight procedure specialist for the project (Flight Tech) will bring our knowledge of specialized design solutions that have been implemented at similar mountain airport locations to the Jackson Hole Airport.
- Not all aircraft have the same navigation capabilities. For example, each aircraft type has a different onboard navigation computer (i.e., Conventional radio based vs GPS based).
- Extensive FAA design rules exist which dictate everything from distance between waypoints, necessary turn radius, altitude & speed limitations and more.
- In addition to FAA design standards there are numerous Airline/Operator performance factors (climb performance and emergency procedures) that must be accounted for as well as Air Traffic Control & traffic deconfliction requirements.



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

National Policy

**ORDER  
8260.3E**

Effective Date:  
09/17/2020

**SUBJ:** United States Standard for Terminal Instrument Procedures (TERPS)

This order prescribes standardized methods for designing and evaluating instrument flight procedures (IFPs) in the United States and its territories. It is to be used by all personnel responsible for the preparation, approval, and promulgation of IFPs. These criteria are predicated on normal aircraft operations and performance.





# Desired Assessment Outcome

The Departure Procedure Evaluation will analyze the following navigation methods for Runway 19 with the goal of finding the most noise friendly path:

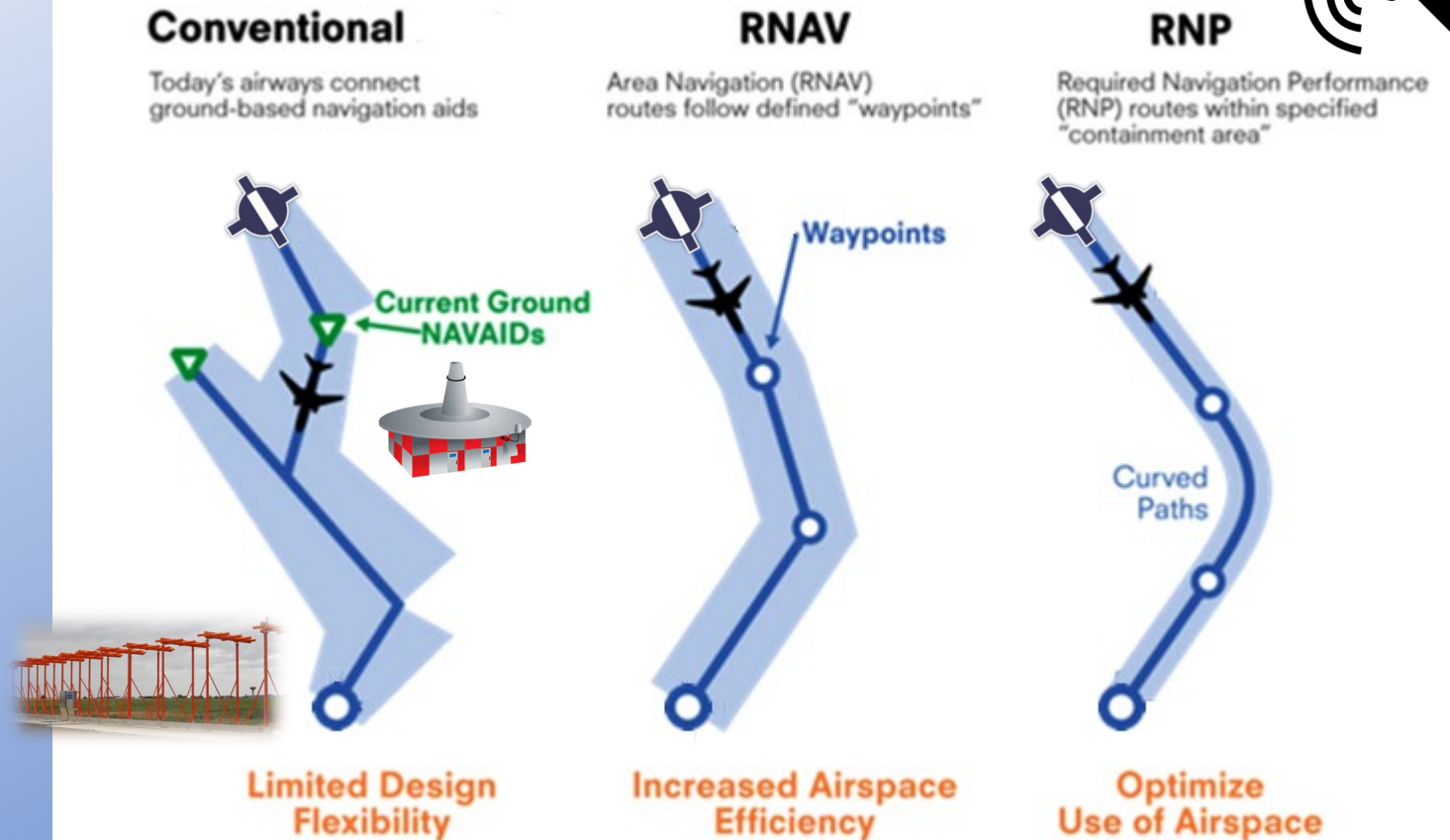
- 1) The assessment of a new conventional instrument departure procedure (using land based radio nav aids). This will utilize existing nav aids located on and off the airport and will provide access to the widest range of aircraft.
- 2) Assessment of a new GPS satellite based departure using Area Navigation. This will utilize GPS waypoints in the sky to guide aircraft from point to point. Similar to conventional, it will have a high rate of usability by a wide range of aircraft.
- 3) Development of a new Advanced Navigation instrument departure procedure utilizing curved path technology. This will utilize a technology called Required Navigation Performance (RNP). It requires special aircraft equipage and authorization and therefore is usually developed as a special procedure. Initially limited to commercial airline fleets, but use will expand over time as newer aircraft models are integrated in to the fleet.

# Types of Flight Procedures

- The navigation capabilities of each aircraft have a high degree of variability.
- These navigation specifications can split in to three groups:
  - Conventional (Radio based)
  - Area Navigation (RNAV GPS/DME)
  - Required Navigation Performance (RNP)
- Each navigation type requires a different level of equipage.
- Conventional and RNAV are the most common.
- RNP are usually only useable by airline and highly equipped business jets.

## NEXT GEN Components: RNAV/RNP

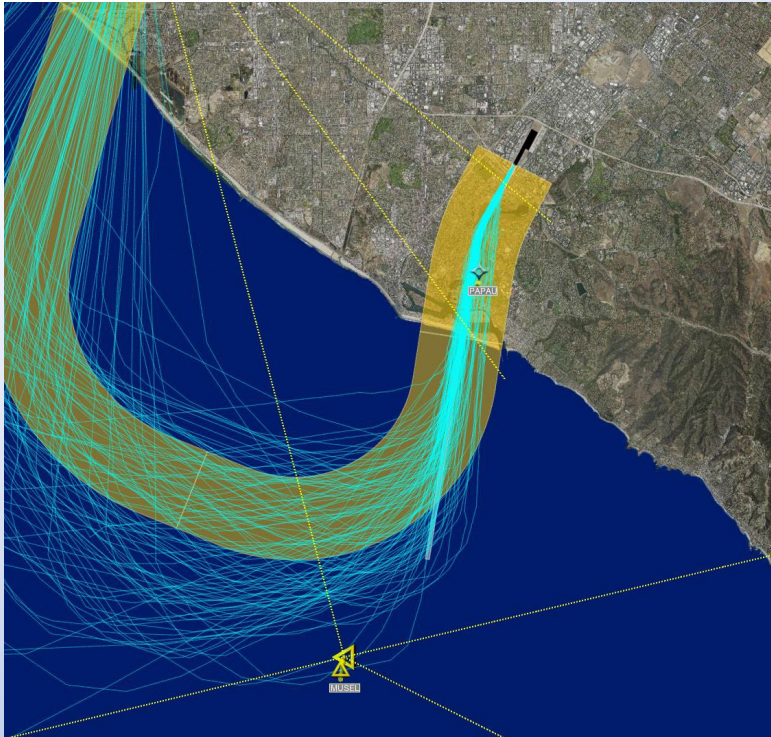
Moving to Performance-Based Navigation



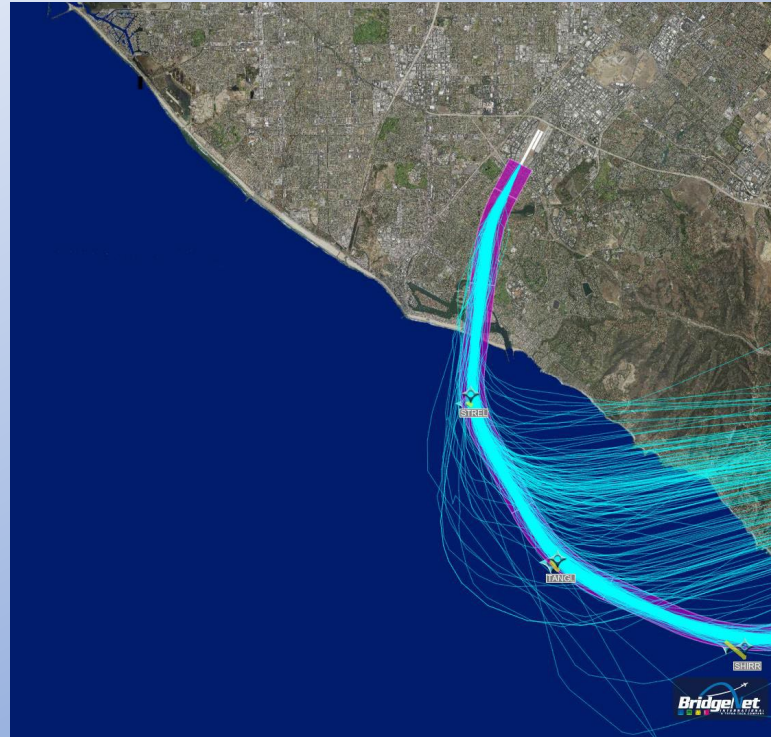
Source: Federal Aviation Administration

# Examples: Types of Flight Procedures

In practical application - Each Navigation method results in a different containment area with RNP procedures resulting in the least variability.



**Conventional**



**RNAV**



**RNP**





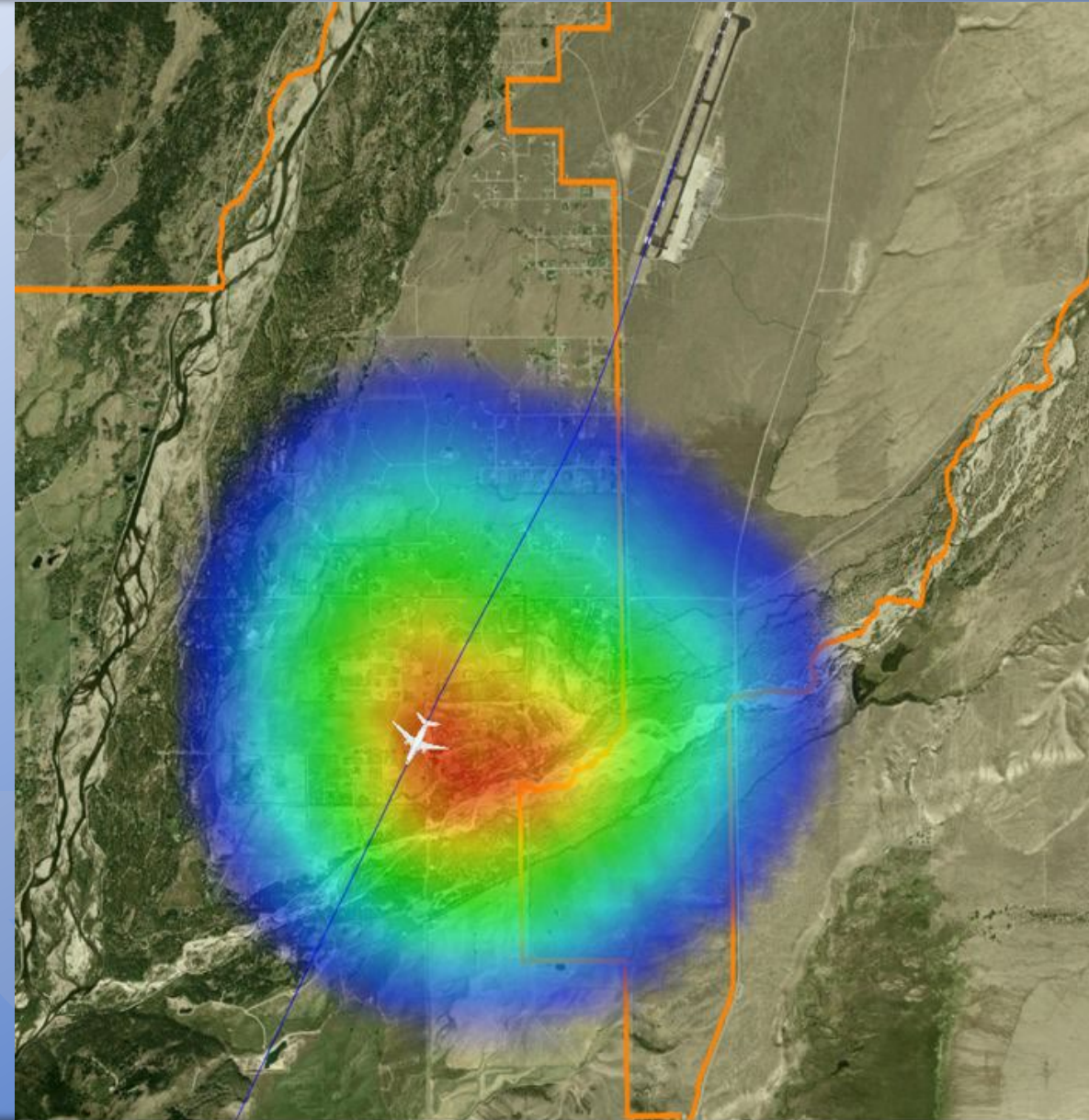
# Flight Procedure Evaluation Steps

1. Data collection and assessment will include:
  - Review of FAA Design and aircraft navigation limitations specific to JAC.
  - Collection and review of noise sensitive locations.
  - Review of existing or future Air Traffic Control preferences and limitations (FAA Enroute facility & Local Tower).
  - Review of Air Carrier & Business Jet Operating limitations.
2. Once the design constraints are established, the Flight Procedure team will begin assessment of new departure procedure paths based on allowable FAA standards.
  - Performed using the same software as the FAA.
  - Will share the results in future meetings to collect additional feedback and apply necessary refinements of procedures..



# Noise Analysis

- ❖ Create existing baseline with monitoring data
  - Use data to show typical aircraft flying the current procedure.
  - Single event noise levels for permanent and temporary sites at representative locations.
- ❖ Potential Procedure Evaluation
  - Model single event levels and the range in change may occur with the potential alternative procedures.
- ❖ If possible, have an operator test fly preferred alternatives



Graphic shows a 2D representation of a 3D flight for single event noise levels. For reference, this is just an example of the type of noise analysis visuals that will be completed in the study.



# Summary

- Next Step: Initiate analysis and evaluation of possible procedures.
- Next Meetings
  - Meeting 2, Common Ground - week of March 21, 2022.
  - Meeting 3, Procedure Concepts - approximately the week of April 18, 2022.
  - Meeting 4, Procedure Refinement - approximately the week of August 1, 2022.
- Questions/Comments?