Fly Quiet

Initial Meeting

Presentation – September 21, 2018

Mead & Hunt

FLY QUIET PROGRAM
JACKSON HOLE AIRPORT

Presentation Outline

- **Goal**
- **Fly Quiet Overview**
- **JAC Potential Program Elements**
- **Fly Quiet Element Scoring Options**
- **Notification and Awards**
- **Discussion and Questions**

Goal

- **Acknowledge and reward those operators that fly quietly as possible and follow voluntary noise abatement programs at the airport.**
- **Create a program to reduce noise on the park and the community through voluntary measures.**

Fly Quiet Overview

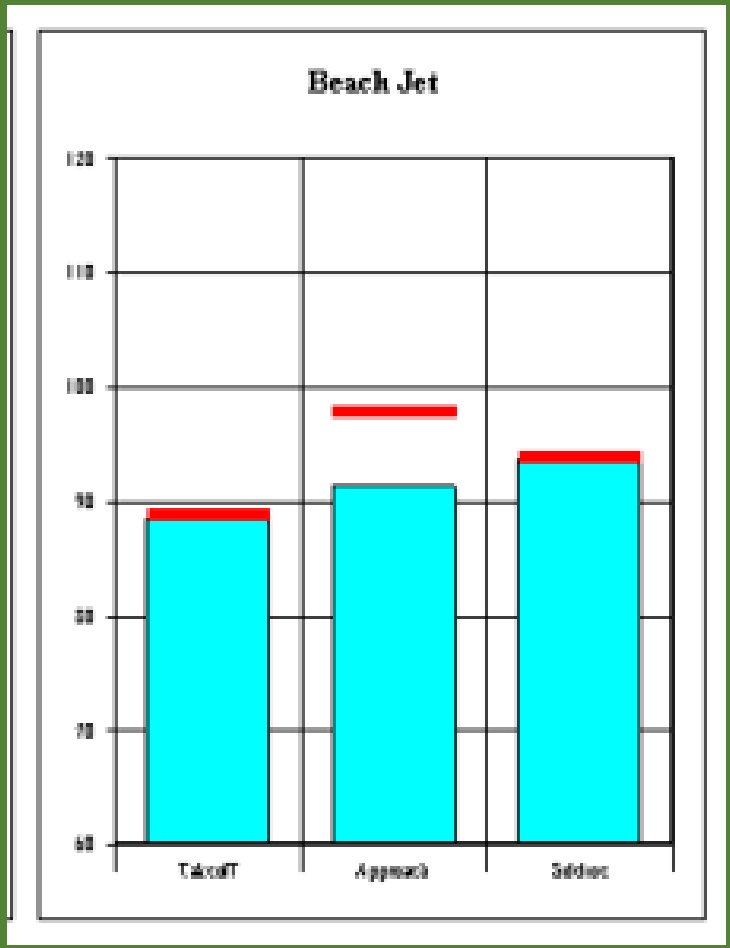
- A Part 150 recommendation
- What airports can and cannot do
- Other airport examples
- Uses data from noise monitoring system (noise and radar)
- Create historical baseline to compare future improvement
- Monitor success of operating quietly on identified noise abatement goals
- Grow and expand over time

JAC Potential Program Elements

- **Fleet Quality Rating**
- **Noise Level Exceedance**
- **Flight Track Usage**
- **Continuous Descent Arrival**
- **Voluntary Curfew**
- **Light Aircraft Operations**

Fleet Quality Rating

- **Determine relative noise rating value for each jet aircraft.**
- **Based upon average of official FAR 36 certified noise levels for each aircraft type**
  - FAR 36 is a measure of noise at 3 locations
    - Takeoff – Approach – Sideline
  - Stage 3 are those aircraft that measure quieter than the limits at the 3 locations
    - limits adjust with weight
  - Stage 4 are those aircraft that the total sum of the 3 points is at least 10 dBA below the limits
  - Stage 5 are those aircraft that the total sum of the 3 points is at least 17 dBA below the limits
- **The proposed Fleet Quality Rating is a measure of the total sum of the three points that each aircraft measured below the FAR36 limits.**
  - With the takeoff measure weighted by x2



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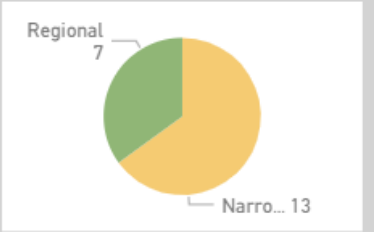
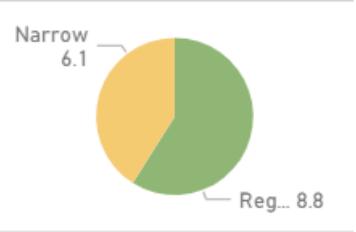
Fleet Quality Rating

Nbr of Departures	Avg Fleet Quality Score
20	7.2

Desc	Nbr Dep	Avg Fleet Qlty
Narrow	13	6.1
Regional	7	8.8
Total	**20**	**7.2**

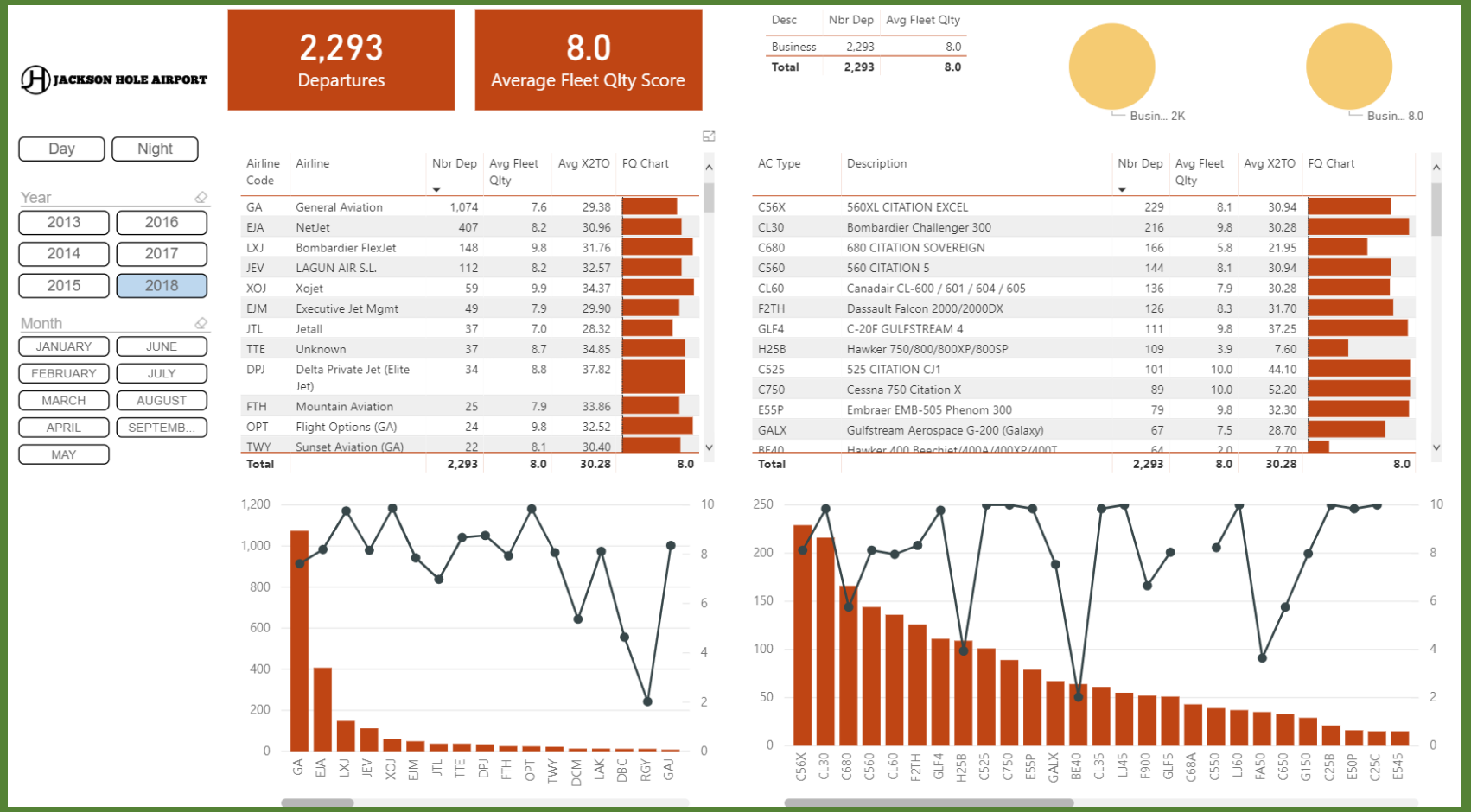




Airline	Nbr Dep	Avg Fleet Qlty	Avg X2TO	FQ Chart
Skywest Airlines	7	8.8	33.4	
Delta Air Lines	5	6.5	24.7	
United Airlines	4	5.5	20.8	
American Airlines	3	6.4	24.3	
Frontier	1	6.4	24.3	
Total	**20**	**7.2**	**27.3**	**7.2**

Aircraft Type	AC_Desc	Nbr Ops	Avg Fleet Qlty	Avg X2TO	FQ Chart
A319	Airbus A319	9	6.4	24.3	
E75L	Embraer 175	5	8.4	32.0	
A320	Airbus A320	3	5.0	19.1	
CRJ7	Canadair Regional Jet 700	2	9.5	36.1	
B752	Boeing 757-200 Passenger	1	6.7	25.6	
Total		**20**	**7.2**	**27.3**	**7.2**

Corporate Jet Fleet Quality



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Noise Level Exceedance

- **Identify operations that generate the highest noise events.**
- **The existing noise monitoring systems measures the noise level of each flight and identifies the aircraft that causes the noise event.**
- **Determine the appropriate noise level threshold values that should be used to determine high noise level events.**
- **Based upon a review of historical noise events measured at each of the noise monitoring locations.**

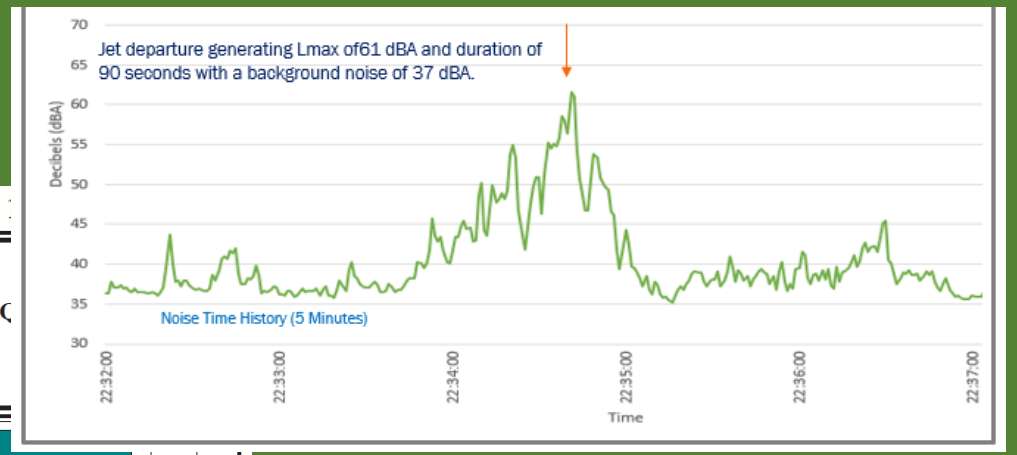
Noise Level Exceedance

Example

Noise Exceedance Rating Report - 1st Quarter 2018 January

Airline		Noise Exceedances			
		Total Noise Exceedances	*Total Quarterly Operations*	*Exceedances per 1000 Operations*	***Score***
NCA Nippon Cargo Airlines	NCA	33	114	289	*8.55*
Avianca	TAI	94	315	298	*8.51*
中国南方航空 China Southern Airlines	CSN	52	172	302	*8.49*
CATHAY PACIFIC	CPA	159	495	321	*8.39*
Air India	AIC	59	160	369	*8.16*
Amelia	AJT	3	8	375	*8.13*
QANTAS	QFA	60	160	375	*8.13*
CHINA AIRLINES	CAL	146	381	383	*8.08*
SINGAPORE AIRLINES	SIA	151	360	419	*7.90*
EVA AIR	EVA	223	463	482	*7.59*
FIJI AIRWAYS	FJI	24	40	600	*7.00*

Noise Exceedance C



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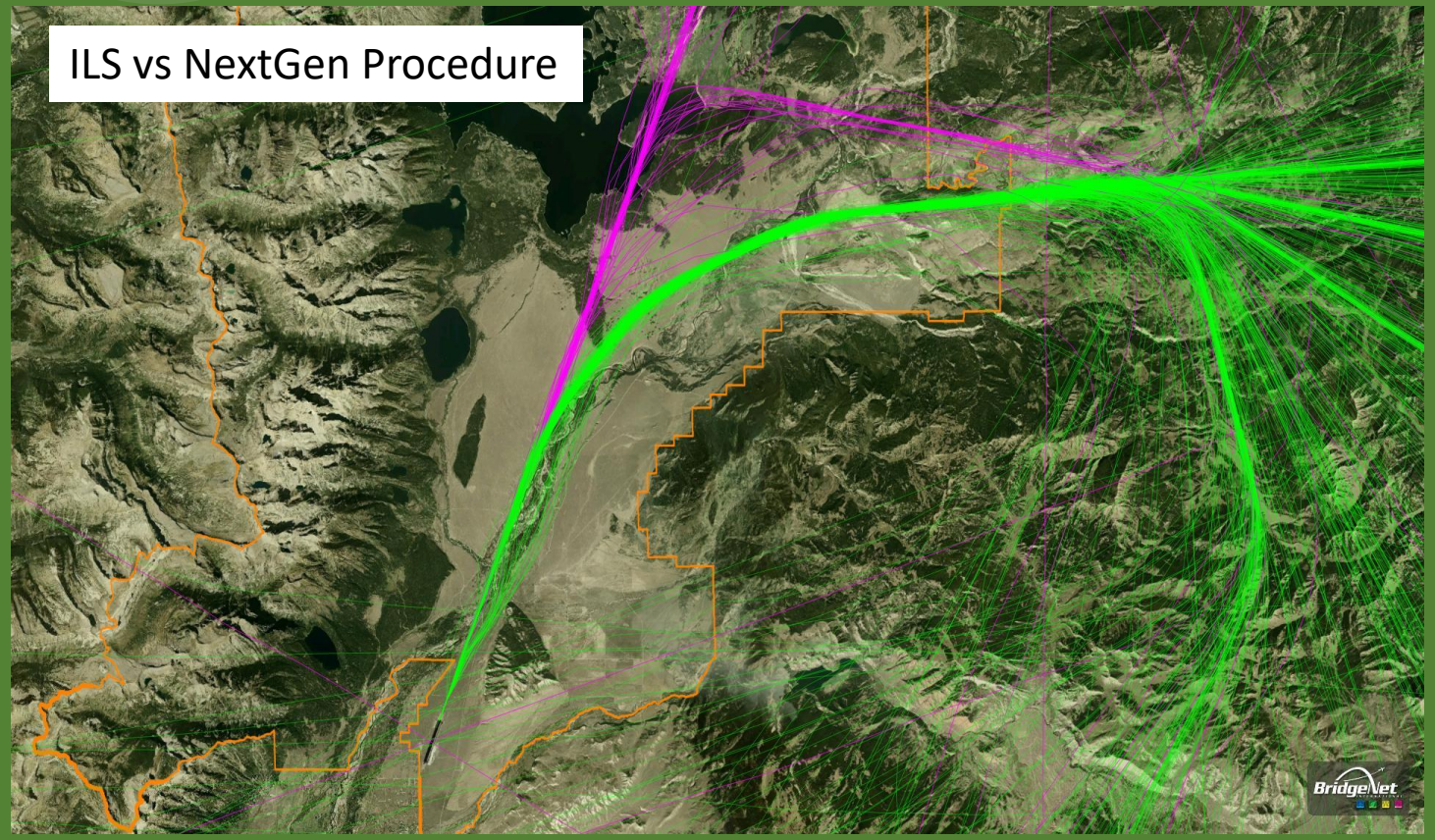
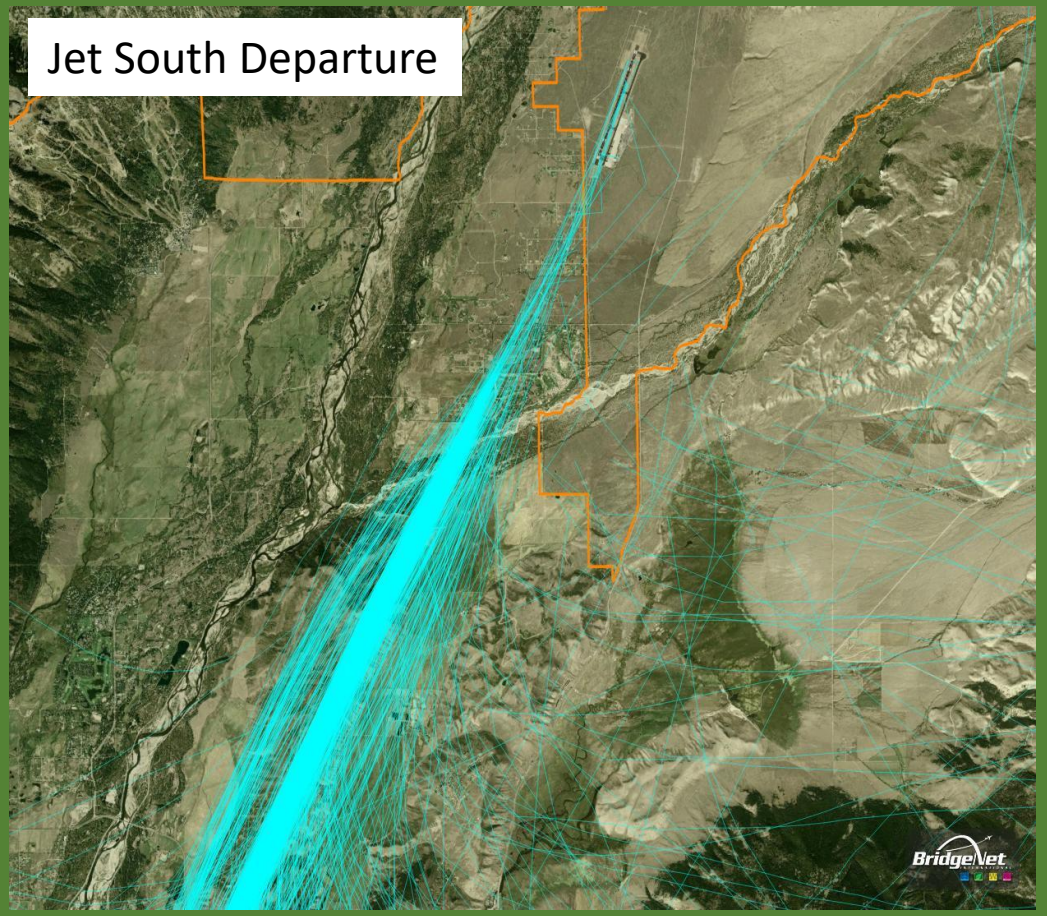
Flight Track Usage

- **Identify Preferred flight tracks**
  - Monitor arrivals from the north over Park (ILS versus curved approach)
  - Monitor early west turn on South Departure
  - South Departure Left Turn
- **Percent tracks used by operator (separated down by commercial, corporate charter, corporate tail number).**

Flight Track Usage





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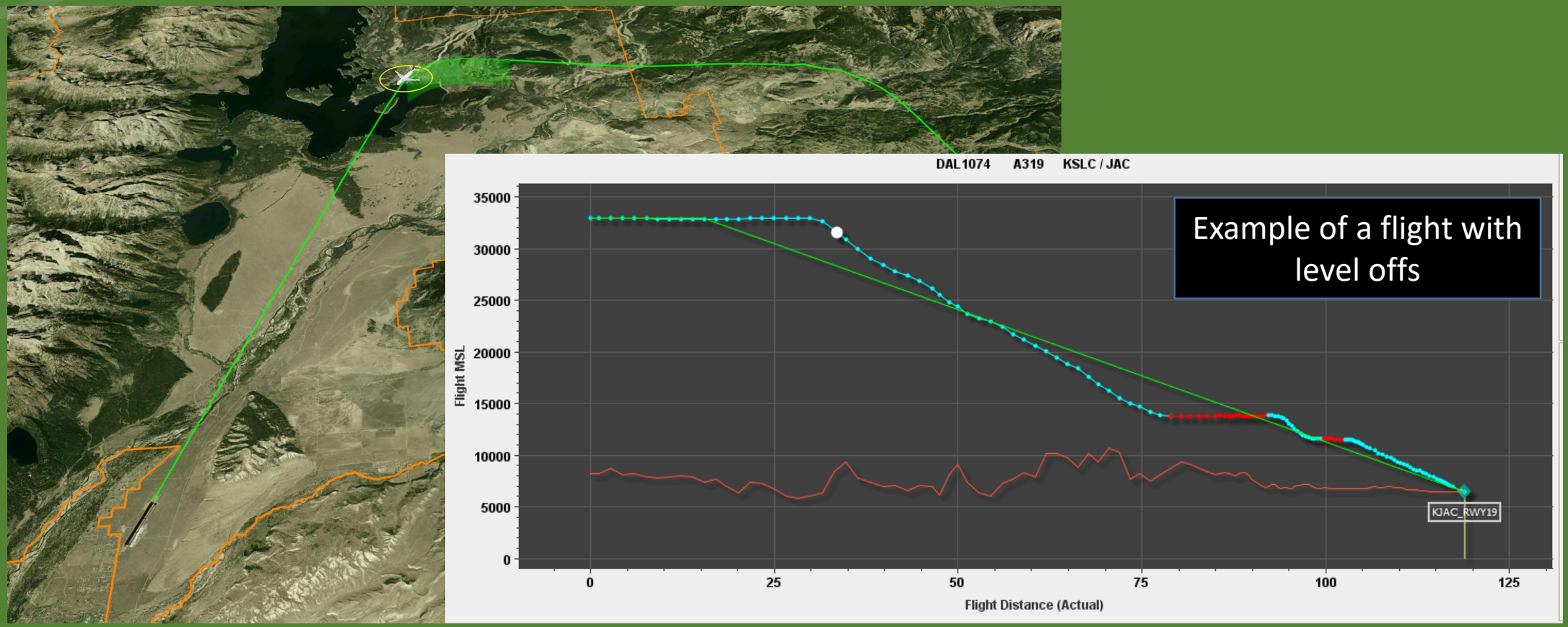
Continuous Descent Approaches (CDA)

- **For jet aircraft landing on Runway 19.**
- **Track the arrival flight profile to determine if the aircraft is flying a optimized path approach path.**
- **Determine if the flight is descending efficiently or if less efficient level segments are utilized.**
- **Separated by commercial, corporate charter, and corporate tail number.**

CDA Approaches



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Voluntary Curfew

- **Track by commercial, corporate charter, and corporate tail number**
  - Monitoring would be based on Voluntary Curfew hours:
    - Landing between 11:30 PM and 6:00 AM
    - Takeoff between 10:00 PM and 6:00 AM
    - Unless an emergency exists
  - Commercial aircraft scheduled hours
    - By contract airlines limited to schedule operations between 7:00 am and 9:30 pm
    - Monitor when commercial operations occur outside those hours

Light Aircraft Paths and Operations

- **Identify preferred flight paths and areas to avoid for small general aviation aircraft.**
  - Update brochure that identifies preferred path(s), altitude and flight corridors for avoiding overflying noise sensitive areas including GTNP
  - Identify a method to acknowledge operators who follow the preferred flight path
  - Include Runway 19 left turn departures

Elements and Scoring

- **0-10 school scoring system**
- **Compare against Baseline conditions**
  - Historical over past 2 years
- **Combining elements for overall score**
  - Equal weighting?
- **Annual reporting**
- **Real-time reporting**

SAN Example of Early Turns

Airline Code		Number of Operations	Percent of Total Operations	Number of Early Turns	Percent of Early Turns from Number of Departures	Early Turns Score
AAL	American Airlines	4,156	11.1%	10	0.5%	2.0
AAY	allegiant air	196	0.5%	0	0.0%	10.0
ASA	Alaska	3,636	9.7%	4	0.2%	8.0
BAW	BRITISH AIRWAYS	176	0.5%	0	0.0%	10.0
CPZ	Compass Airlines	108	0.3%	12	22.2%	2.5
DAL	DELTA	3,220	8.6%	10	0.6%	3.0

Scoring Example

Fleet Quality Rating

- **10 and best**
- **0 is worst**
- **Aircraft certification data**
  - 0 is a Stage 3 limit
  - 10 is higher than Stage 5 limit
  - 737-700 is a 5.4 score
  - 737 MAX is a 9.6 score
  - Scale between

AC Type	Description	Avg Fleet Qlty	Avg X2TO	FQ Chart
B38M	Boeing 737-800 Passenger MAX	9.6	36.6	
B39M	Boeing 737-800 MAX Passenger	9.6	36.6	
MD90	Boeing (Douglas) MD-90	9.3	35.6	
A21N	Airbus A321 neo	9.0	34.2	
B712	Boeing 717-200	7.7	29.3	
B752	Boeing 757-200 Passenger	6.7	25.6	
B753	Boeing 757-300 Passenger	6.7	25.5	
A319	Airbus A319	6.4	24.3	
B736	Boeing 737-600 Passenger	6.2	23.7	
DC87	Boeing (Douglas) DC-8-72 Passenger	6.0	22.9	
B737	Boeing 737-700 Passenger	5.4	20.6	
B738	Boeing 737-800 Passenger	5.2	20.0	

Overall Weighting Example

Elements	Commercial	GA Jet	Light Aircraft
Fleet Quality	20%	20%	N.A.
Noise Exceedance	20%	20%	Yes
Jet Aircraft Flight Track Compliance	20%	20%	N.A.
Jet Aircraft Continuous Descent	20%	20%	N.A.
Night Operations	20%	20%	Yes
Light Aircraft Paths and Operations	N.A.	N.A.	Yes

SAN Example

Airline Code		Number of Operations	Percent of Total Operations	Curfew Violations Score	Early Turns Score	Fleet Noise Quality Score	Total Fly Quiet Score
JBU	jetBlue AIRWAYS	788	2.2%	5.0	9.5	10.0	24.5
VRD	america	902	2.5%	10.0	7.0	7.0	24.0
FDX	FedEx	616	1.7%	10.0	9.0	5.0	24.0
ROU	rouge	162	0.4%	10.0	10.0	4.0	24.0
UPS	ups	230	0.6%	10.0	8.5	5.0	23.5
FFT	FRONTIER	530	1.5%	4.0	10.0	8.0	22.0

Awards and Acknowledgements

- **Best in each category**
  - Air carrier and regional jets
  - Corporate jet operators
    - Flight departments (i.e., NetJets)
    - Tail number corporate jets
  - Small GA aircraft
- **Methods**
  - Awards
  - Press release
  - Gifts
  - Other options?