



Airspace Challenges and Opportunities



Airspace Challenges and Opportunities Plenary Session

Panel Moderator: **Ms. Tamara Swann**,
Regional Administrator (Acting) FAA
Western-Pacific Region

Speakers:

- **Mr. Randy Willis**

Air Traffic Organization Unmanned Aircraft Systems (UAS) Integration Manager, FAA Headquarters

- **Mr. Mike Cirillo**

Managing Director of Air Traffic Management, Airlines for America

- **Mr. John F. Ruhs**

Assistant Director, Fire and Aviation, Bureau of Land Management

- **Colonel James “Flash” Frickel**

Commander, HQ Utah Test and Training Range

FAA Unmanned Aircraft Systems (UAS) Integration Update

Presented to: Western Regional Partnership

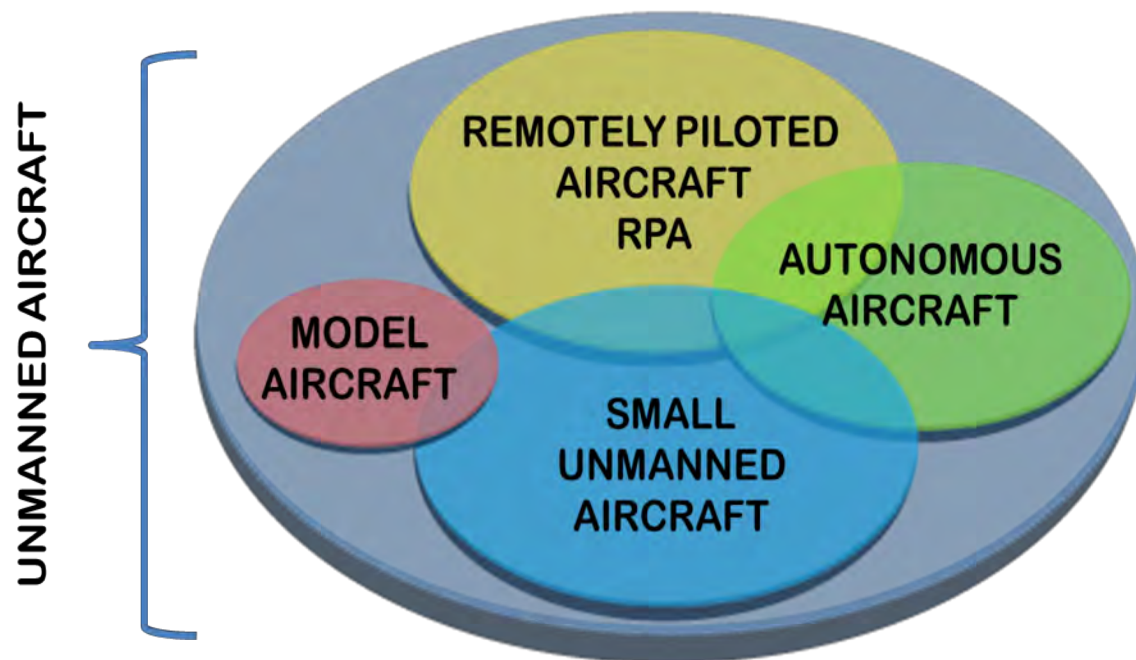
Presented by: Randy Willis, Manager, ATO UAS Integration

Date: Nov 14, 2018

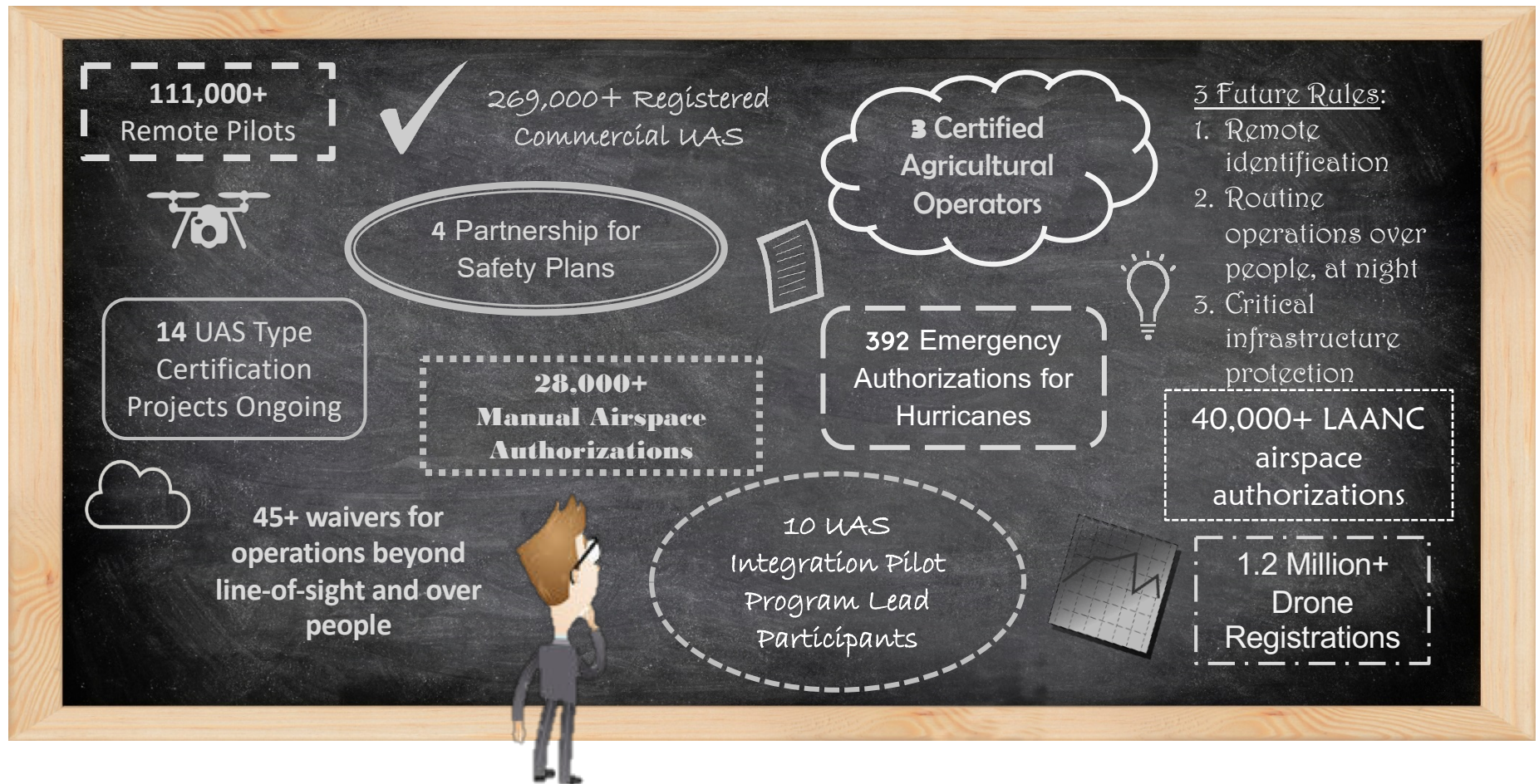


What's in a Name?

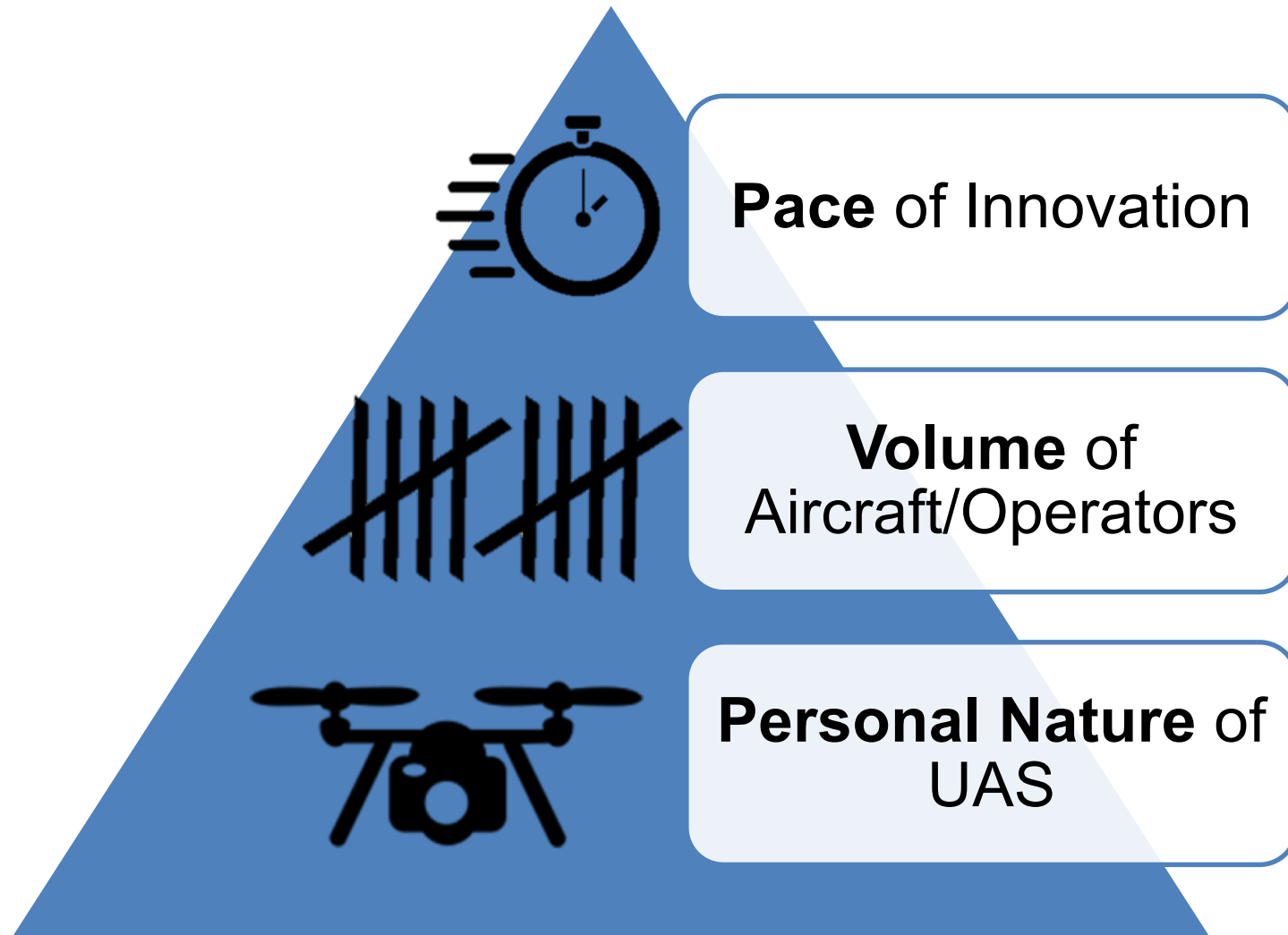
- **RPAS:** An RPAS is a fully certified aviation product
- **All RPAS are UAS; only a few UAS are RPAS**



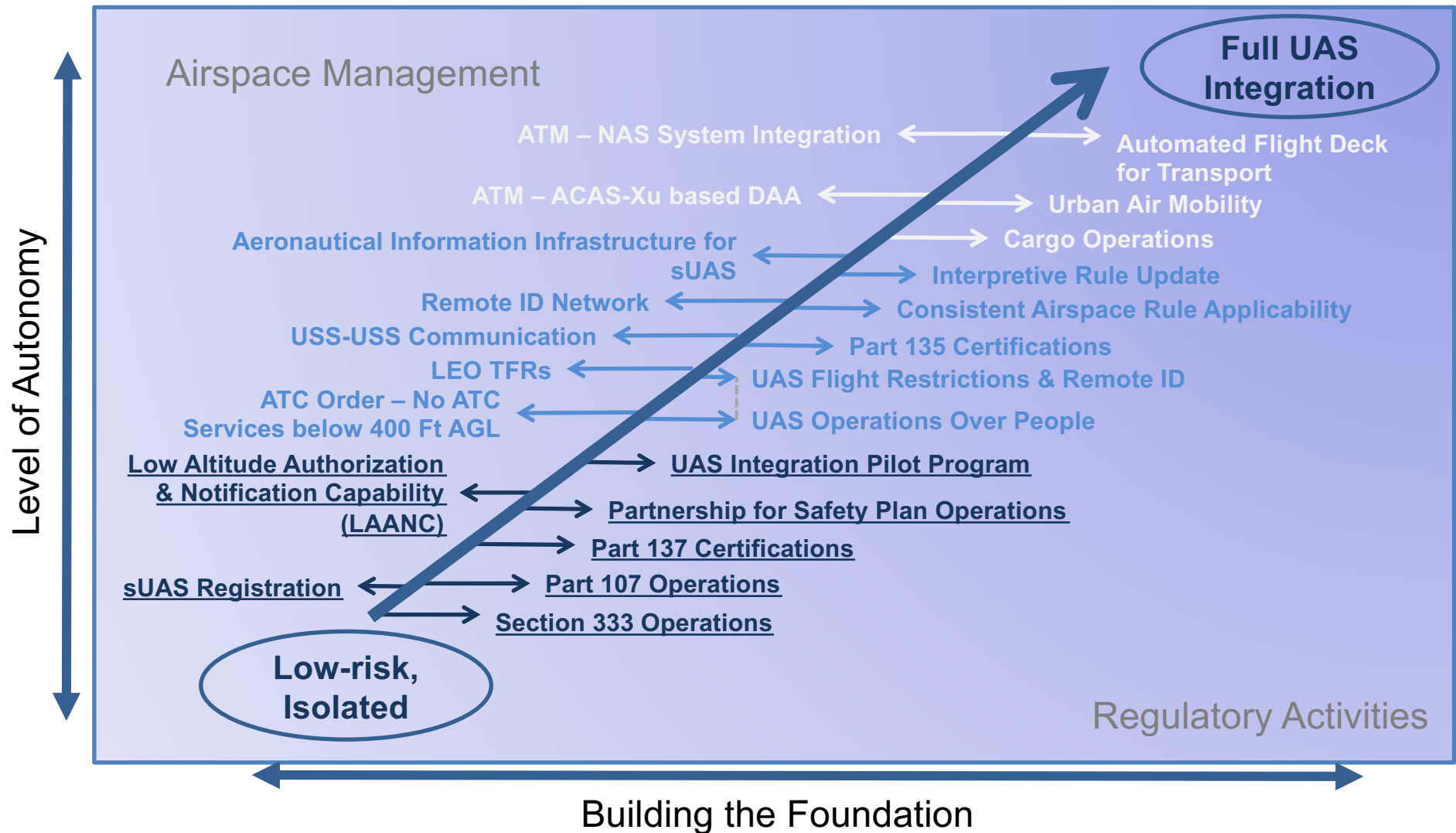
UAS Integration – Facts & Figures



Integration Challenges



UAS Integration Strategy – 2019



UAS Integration Pilot Program



Develop and
test
innovative
UAS
concepts

Inform future
guidelines
and
regulations

Evaluate
involvement
of state,
local, tribal
governments



Federal Aviation
Administration
www.faa.gov/uas

UAS IPP Prioritized Operations

Choctaw Nation

- Agricultural management
- BVLOS, delivery, ops over people



City of San Diego

- Package delivery
- International commerce and border security



Innovation & Entrepreneurship Investment Authority (VA)

- Package delivery
- Infrastructure inspection

Kansas DOT

- Infrastructure inspection
- Precision agriculture



Lee County Mosquito Control District

- Aerial inspection
- Spraying larvacide, herbicide

Memphis-Shelby County Airport Authority

- Aircraft inspections
- Security monitoring

North Carolina DOT

- Medical package delivery, urban and remote areas

North Dakota DOT

- Energy distribution line inspection
- Media and emergency response

City of Reno

- Medical package delivery
- BVLOS



University of Alaska, Fairbanks

- Pipeline surveillance
- Long distance BVLOS



Questions?



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Federal Aviation
Administration
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Airlines for America
We Connect the World

Airspace Challenges and Opportunities

Mike Cirillo
Managing Director, Air Traffic Management

November 14, 2018

What is A4A ?



Founded in 1936 by a group of airlines, today it remains the primary trade organization of the principal US airlines.

Airlines for America (A4A) vigorously advocates for America's airlines as models of safety, customer service and environmental responsibility; and as the indispensable network that drives our nation's economy and global competitiveness.

A4A members and affiliates transport approximately 90 percent of U.S. airline passenger and cargo traffic.

A4A Member Airlines

American Airlines 

FedEx®


**SOUTHWEST
AIRLINES**

Alaska Airlines


HAWAIIAN
— AIRLINES —

UNITED 

jetBlue
AIRWAYS®


ups


AIR CANADA


ATLAS AIR

 **Airlines for America**
We Connect the World



WRP States Airport Activity

OPSNET : Airport Operations : Standard Report

From 10/2015 To 09/2018 | State=AZ, CA, CO, NM, NV, UT

Fiscal Year State	Air Carrier	Itinerant				Local			Total Operations
		Air Taxi	General Aviation	Military	Total	Civil	Military	Total	
2016 AZ	405,298	313,003	648,788	39,535	1,406,624	1,109,891	39,212	1,149,103	2,555,727
2016 CA	1,735,283	498,816	2,282,108	53,688	4,569,895	2,120,369	52,083	2,172,452	6,742,347
2016 CO	470,404	197,455	377,286	34,791	1,079,936	378,331	57,702	436,033	1,515,969
2016 NM	51,260	45,159	99,839	31,608	227,866	88,408	22,382	110,790	338,656
2016 NV	398,674	182,593	166,807	4,460	752,534	92,972	809	93,781	846,315
2016 UT	196,032	79,158	95,688	8,065	378,943	87,325	353	87,678	466,621
Sub-Total for 2016	3,256,951	1,316,184	3,670,516	172,147	8,415,798	3,877,296	172,541	4,049,837	12,465,635
2017 AZ	427,782	293,521	667,714	35,860	1,424,877	1,112,245	27,765	1,140,010	2,564,887
2017 CA	1,860,045	484,704	2,204,453	52,367	4,601,569	2,175,580	45,778	2,221,358	6,822,927
2017 CO	494,977	196,701	333,528	85,182	1,110,388	341,070	125,342	466,412	1,576,800
2017 NM	54,070	43,896	98,638	24,484	221,088	82,763	15,237	98,000	319,088
2017 NV	406,671	197,458	157,755	5,528	767,412	113,963	1,306	115,269	882,681
2017 UT	210,800	72,834	106,310	8,016	397,960	86,332	443	86,775	484,735
Sub-Total for 2017	3,454,345	1,289,114	3,568,398	211,437	8,523,294	3,911,953	215,871	4,127,824	12,651,118
2018 AZ	433,305	294,049	683,778	29,429	1,440,561	1,128,317	23,739	1,152,056	2,592,617
2018 CA	1,959,567	474,236	2,280,662	50,350	4,764,815	2,256,069	44,808	2,300,877	7,065,692
2018 CO	493,973	215,679	349,388	94,211	1,153,251	362,209	133,054	495,263	1,648,514
2018 NM	62,876	46,523	105,776	25,282	240,457	88,971	16,069	105,040	345,497
2018 NV	410,130	185,989	158,423	6,011	760,553	115,950	1,025	116,975	877,528
2018 UT	221,562	66,938	122,490	7,260	418,250	90,288	355	90,643	508,893
Sub-Total for 2018	3,581,413	1,283,414	3,700,517	212,543	8,777,887	4,041,804	219,050	4,260,854	13,038,741
Total:	10,292,709	3,888,712	10,939,431	596,127	25,716,979	11,831,053	607,462	12,438,515	38,155,494

2016

OPSNET : Airport Operations : Standard Report

From 01/2016 To 09/2018 | Facility=ABQ, BUR, DEN, LAS, LAX, LGA, LGB, OAK, ONT, OXR, PHX, PSP, SAN, SFO, SJC, SLC, SMF, SNA, TUS, VNY

Calendar Year	Facility	Itinerant					Local			Total Operations
		Air Carrier	Air Taxi	General Aviation	Military	Total	Civil	Military	Total	
2016	ABQ	51,143	22,148	29,759	17,205	120,255	6,953	6,620	13,573	133,828
2016	BUR	43,846	20,205	39,688	1,164	104,903	27,485	3	27,488	132,391
2016	DEN	445,019	122,982	4,376	143	572,520	0	0	0	572,520
2016	LAS	360,098	132,009	42,617	1,016	535,740	0	0	0	535,740
2016	LAX	622,754	48,717	24,290	1,129	696,890	0	0	0	696,890
2016	LGA	313,990	54,153	6,146	198	374,487	0	0	0	374,487
2016	LGB	26,920	6,487	106,481	915	140,803	154,046	37	154,083	294,886
2016	OAK	123,731	24,742	40,414	1,551	190,438	31,413	948	32,361	222,799
2016	ONT	56,145	17,588	11,914	429	86,076	5,575	20	5,595	91,671
2016	OXR	0	4,953	28,263	184	33,400	40,361	390	40,751	74,151
2016	PHX	361,395	55,838	20,815	2,540	440,588	42	13	55	440,643
2016	PSP	15,229	15,445	18,512	1,898	51,084	4,565	270	4,835	55,919
2016	SAN	173,687	12,694	9,660	894	196,935	0	0	0	196,935
2016	SFO	379,647	55,482	12,691	2,571	450,391	0	0	0	450,391
2016	SJC	102,406	24,084	29,380	276	156,146	4,349	14	4,363	160,509
2016	SLC	198,575	72,937	39,335	7,204	318,051	2,202	6	2,208	320,259
2016	SMF	88,829	12,552	7,035	875	109,291	790	1,106	1,896	111,187
2016	SNA	92,096	16,534	99,975	391	208,996	91,184	174	91,358	300,354
2016	TUS	33,874	16,833	38,388	18,888	107,983	20,776	8,802	29,578	137,561
2016	VNY	55	17,134	129,862	381	147,432	66,130	4	66,134	213,566
Sub-Total for 2016		3,489,439	753,517	739,601	59,852	5,042,409	455,871	18,407	474,278	5,516,687

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2017	ABQ	52,661	24,120	28,097	15,605	120,483	7,732	6,534	14,266	134,749
2017	BUR	51,486	19,625	37,430	1,080	109,621	22,036	2	22,038	131,659
2017	DEN	461,992	116,305	4,120	69	582,486	0	0	0	582,486
2017	LAS	362,898	135,977	42,891	1,228	542,994	0	0	0	542,994
2017	LAX	645,405	34,971	19,457	529	700,362	0	0	0	700,362
2017	LGA	308,820	51,547	5,393	258	366,018	0	0	0	366,018
2017	LGB	35,996	6,735	103,323	846	146,900	155,450	10	155,460	302,360
2017	OAK	129,764	24,362	41,568	1,567	197,261	38,379	988	39,367	236,628
2017	ONT	61,502	17,304	11,968	331	91,105	6,273	2	6,275	97,380
2017	OXR	0	4,629	25,366	187	30,182	36,594	156	36,750	66,932
2017	PHX	378,911	28,747	21,014	2,296	430,968	0	0	0	430,968
2017	PSP	19,232	10,362	17,453	1,578	48,625	3,007	182	3,189	51,814
2017	SAN	188,581	10,662	9,613	707	209,563	0	0	0	209,563
2017	SFO	397,492	48,350	11,856	2,648	460,346	0	0	0	460,346
2017	SJC	120,650	23,211	30,072	216	174,149	4,442	4	4,446	178,595
2017	SLC	210,768	67,436	39,070	7,227	324,501	2,777	14	2,791	327,292
2017	SMF	98,811	10,711	6,835	702	117,059	740	986	1,726	118,785
2017	SNA	91,070	16,756	102,782	401	211,009	99,541	56	99,597	310,606
2017	TUS	35,712	13,146	35,933	16,811	101,602	19,574	8,171	27,745	129,347
2017	VNY	58	20,384	130,540	536	151,518	72,876	4	72,880	224,398
Sub-Total for 2017		3,651,809	685,340	724,781	54,822	5,116,752	469,421	17,109	486,530	5,603,282

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2018	ABQ	44,097	20,080	23,088	11,014	98,279	6,865	3,715	10,580	108,859
2018	BUR	39,663	16,795	24,145	605	81,208	18,600	0	18,600	99,808
2018	DEN	345,600	103,453	3,121	98	452,272	0	0	0	452,272
2018	LAS	275,134	97,525	32,292	911	405,862	0	0	0	405,862
2018	LAX	489,084	29,939	13,566	365	532,954	0	0	0	532,954
2018	LGA	230,938	40,955	3,634	157	275,684	0	0	0	275,684
2018	LGB	27,037	6,334	73,323	666	107,360	82,544	47	82,591	189,951
2018	OAK	98,794	20,108	30,569	701	150,172	31,010	235	31,245	181,417
2018	ONT	51,706	9,966	8,537	284	70,493	4,625	2	4,627	75,120
2018	OXR	0	3,853	21,470	124	25,447	30,852	86	30,938	56,385
2018	PHX	286,974	20,707	14,636	1,648	323,965	0	0	0	323,965
2018	PSP	14,757	7,824	14,113	1,226	37,920	2,882	100	2,982	40,902
2018	SAN	150,756	9,411	7,826	584	168,577	0	0	0	168,577
2018	SFO	307,925	35,985	8,889	1,934	354,733	0	0	0	354,733
2018	SJC	100,984	17,304	24,685	191	143,164	2,953	4	2,957	146,121
2018	SLC	168,523	45,414	31,957	5,070	250,964	4,311	13	4,324	255,288
2018	SMF	80,456	7,195	5,002	687	93,340	1,928	1,018	2,946	96,286
2018	SNA	69,427	13,828	84,896	578	168,729	83,719	94	83,813	252,542
2018	TUS	26,981	10,418	27,614	10,423	75,436	20,015	5,132	25,147	100,583
2018	VNY	169	20,540	105,506	513	126,728	69,723	1	69,724	196,452
Sub-Total for 2018		2,809,005	537,634	558,869	37,779	3,943,287	360,027	10,447	370,474	4,313,761
Total:		9,950,253	1,976,491	2,023,251	152,453	14,102,448	1,285,319	45,963	1,331,282	15,433,730

Report created on Tue Nov 6 17:12:29 EST 2018

Sources: The Operations Network (OPSNET)

[Show data notices.](#)

Aviation Rulemaking Committees and Advisory Committees

Nextgen Advisory Committee

UAS in Controlled Airspace ARC

Airspace Access Priorities ARC

Spaceport Licensing and Permitting ARC

Spaceport Categorization

Collaborative Decision Making (CDM)



UAS in Controlled Airspace ARC

Airline Position

Nav and Performance
Automation

Transition to and from Class A Airspace
Airspace and Procedures



Commercial Space

Airspace Access Priorities ARC status

Airline position on spaceport establishment and operational decisions relative to commercial space.



Back-up

Other potential topics

Performance Based Navigation
Metroplex in the western states

Construction

Nextgen programs



Fire Aviation and Airspace Management



Aviation in Fire Response and Management

- Retardant and Water Delivery
- Crew Transport and Shuttle
- Smokejumper Delivery
- Aerial Supervision and Lead Plane
- Infrared Mapping
- Perimeter Mapping

Multiple Types and Sizes of Aircraft

**Dispatched and Operated in Variety of Locations
Urban to Wilderness**

10-Year Averages (2008-2017) BLM Only

21,350 flight hours per year

- 41% Fixed Wing
- 36% Helicopters
- 20% Single Engine Airtankers (SEATs)
- 3% Fleet
- 3.66 accidents per 100,000 hours
- \$28,001,000 /year budgeted for aircraft availability
- Safety Management Systems/Quality Assurance annual goal, review 25-30% of Exclusive-Use contract aircraft.

Multiple-use missions requiring aviation support

- Fire (62% of mission flights)
- Resource Work (36% of mission flights)
- Law Enforcement (2% of mission flights)



Airspace Coordination and Management

- FAA Oversight, Responsibility Shared By All

National Wildfire Coordinating Group Standards for Airspace Coordination

- Interagency policy and guidance that standardizes safe, consistent approaches to issues involving airspace and agency land management responsibilities.

National Interagency Aviation Committee (NIAC)

- The NIAC facilitates the development and implementation of interagency fire aviation standards, procedures, and programs to enhance safety, effectiveness, and efficiency in all areas of aviation operations.

Incident Airspace Management

Depending on Complexity, May Have Some or All Types Aircraft

- Large airtankers – *entering, dropping, exiting*
- Single Engine Airtankers – *entering, dropping, exiting*
- Multiple sizes of helicopters – *dipping and delivering water, shuttling crews*
- Lead Planes – *managing, leading air tankers*
- UAS – *mapping, reconnaissance, infrared*

Air Tactical Group Supervisor (Air Attack)

- Operates at higher altitude
- Airborne ATC – Manages aircraft within the incident airspace

UAS and Fire

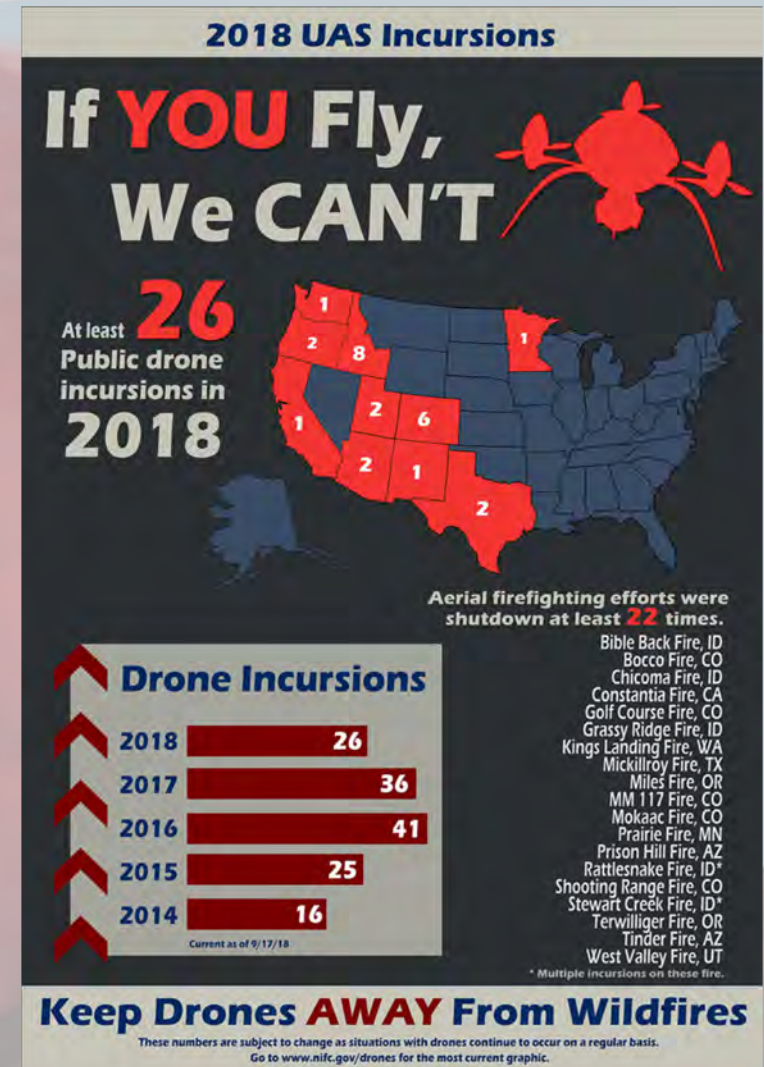
- Fire aviator safety is top concern
- Aerial Ops shut down 22 times in 2018
- Aggressive education campaign
- Incursion numbers down in 2018

Authorized Use

Valuable tool for:

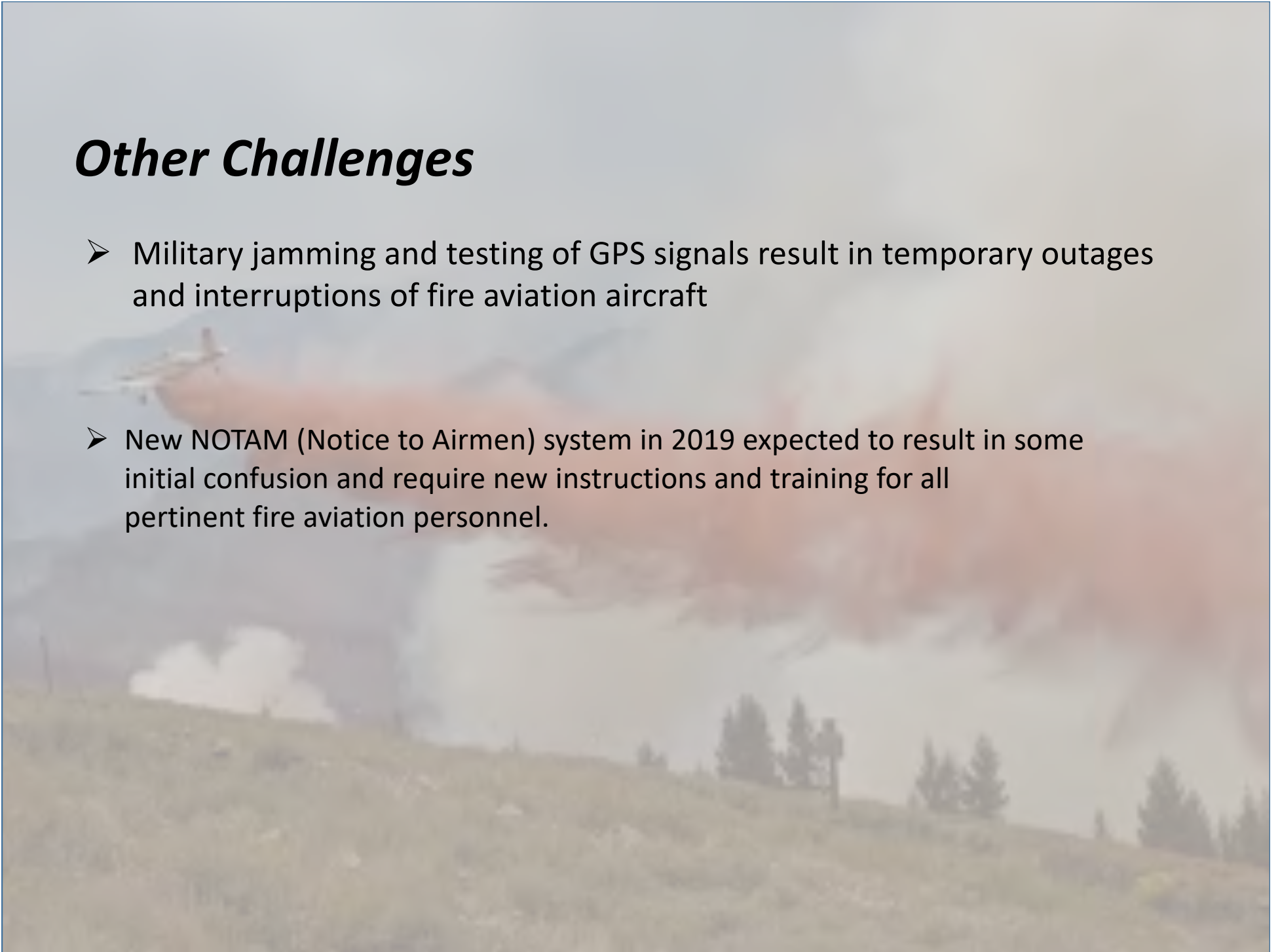
- Gathering intel
- Mapping
- Infrared

2018 used larger UAS with longer flight and beyond line-of-sight capabilities



Other Challenges

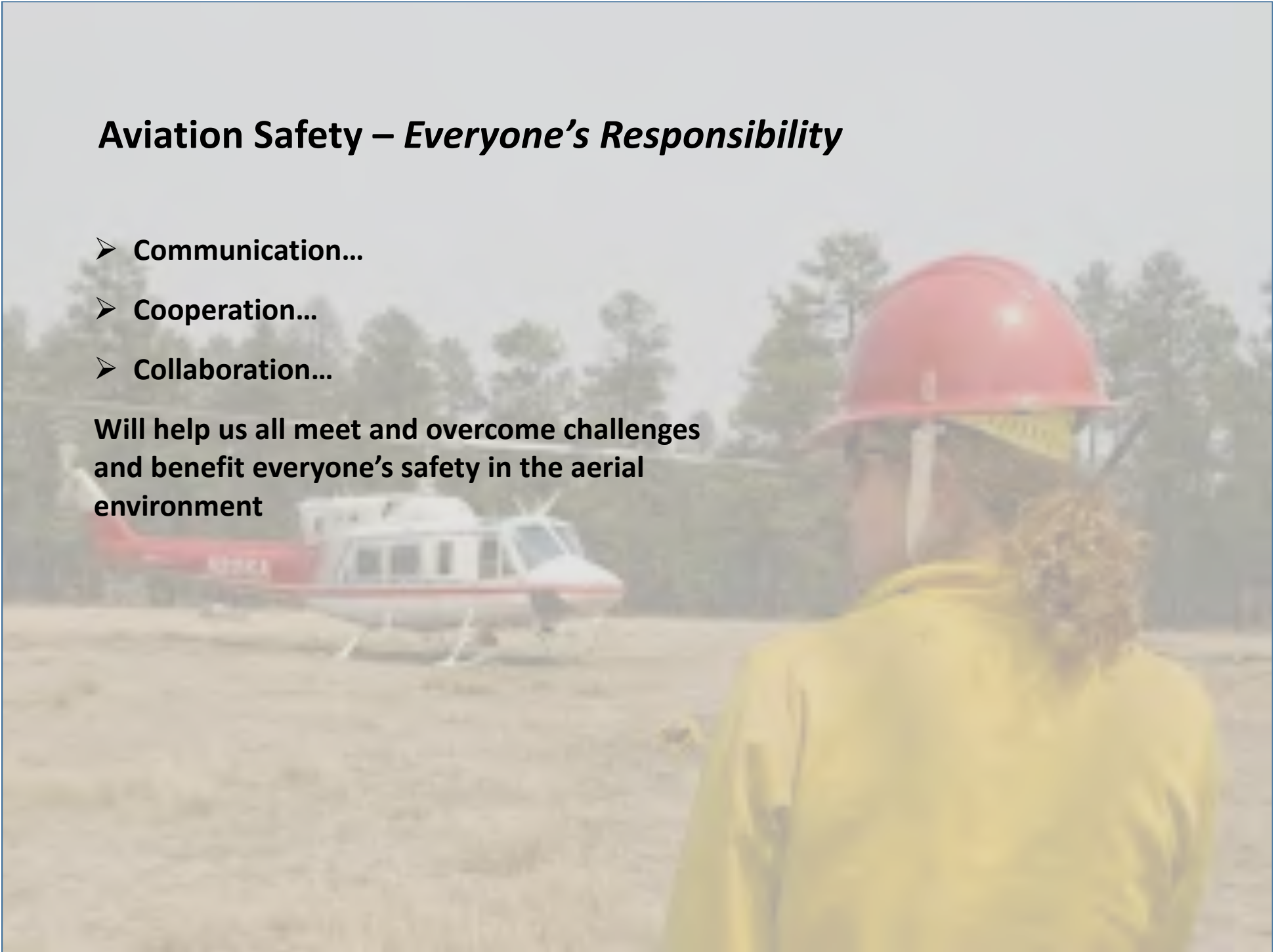
- Military jamming and testing of GPS signals result in temporary outages and interruptions of fire aviation aircraft
- New NOTAM (Notice to Airmen) system in 2019 expected to result in some initial confusion and require new instructions and training for all pertinent fire aviation personnel.



Aviation Safety – *Everyone's Responsibility*

- **Communication...**
- **Cooperation...**
- **Collaboration...**

**Will help us all meet and overcome challenges
and benefit everyone's safety in the aerial
environment**





Questions?



UNCLASS

Libertas Vel Mor



Welcome

The overall classification of this briefing is: **UNCLASSIFIED**

UNCLASS

Col James Frickel
HQ UTTR / CC
777-5072

The logo is a circular emblem with a red border. The top half is blue with two white arrows pointing upwards. The bottom half is orange with a yellow lightning bolt. The text 'TO WIN WARRIORS TEST WEAPONS' is written in red along the top arc, and 'UTAH TEST AND TRAINING RANGE' is written in red along the bottom arc.

Fly, Fight, Win!



Utah Test and Training Range



Libertas Vel Mor

“Providing war fighters with a realistic training environment and provide **test and evaluation of overland, large footprint weapons** to enhance combat readiness, superiority, and sustainability.”



We Train Warriors and Test Weapons

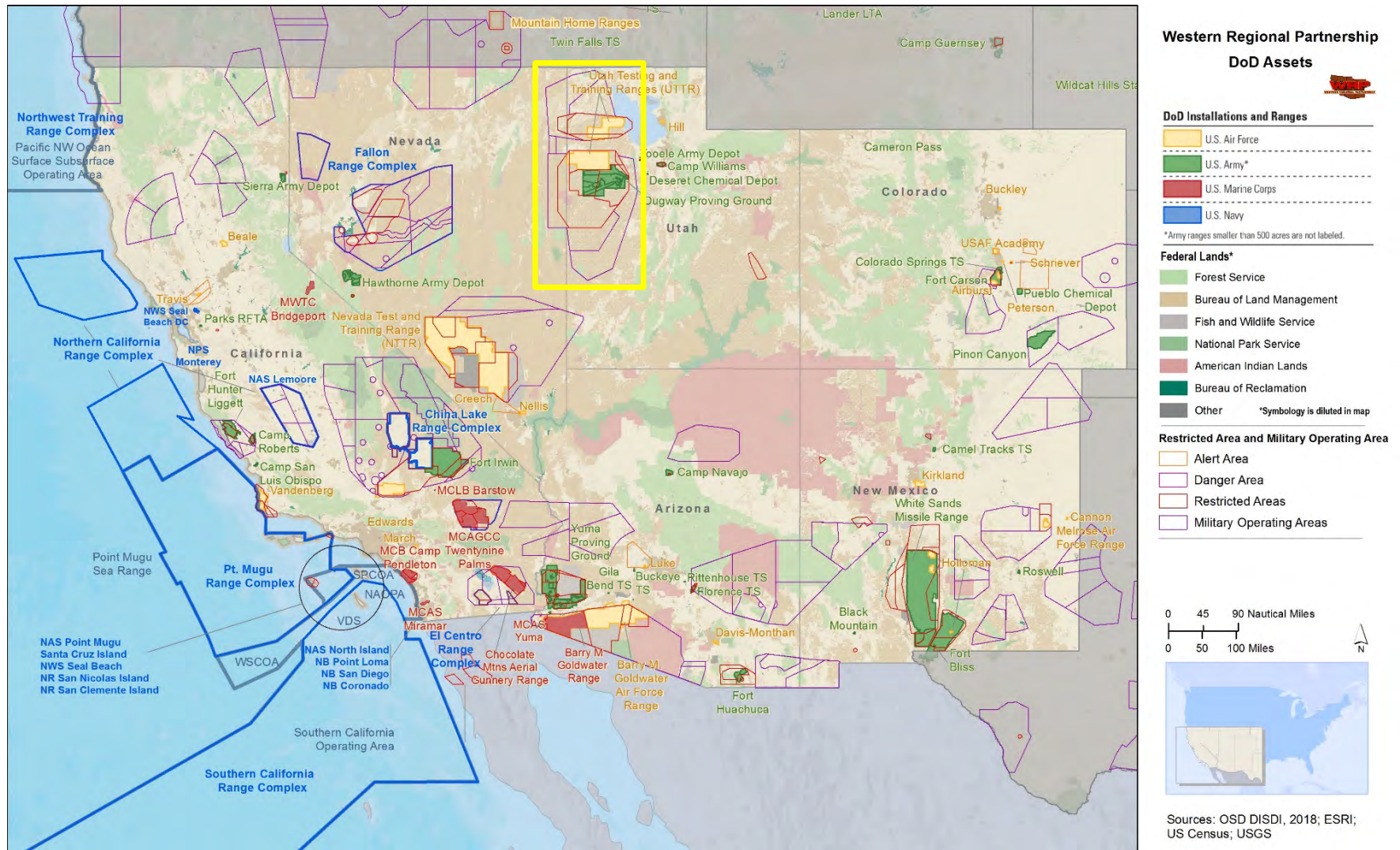
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Western Regional Ranges



Libertas Vel Mor



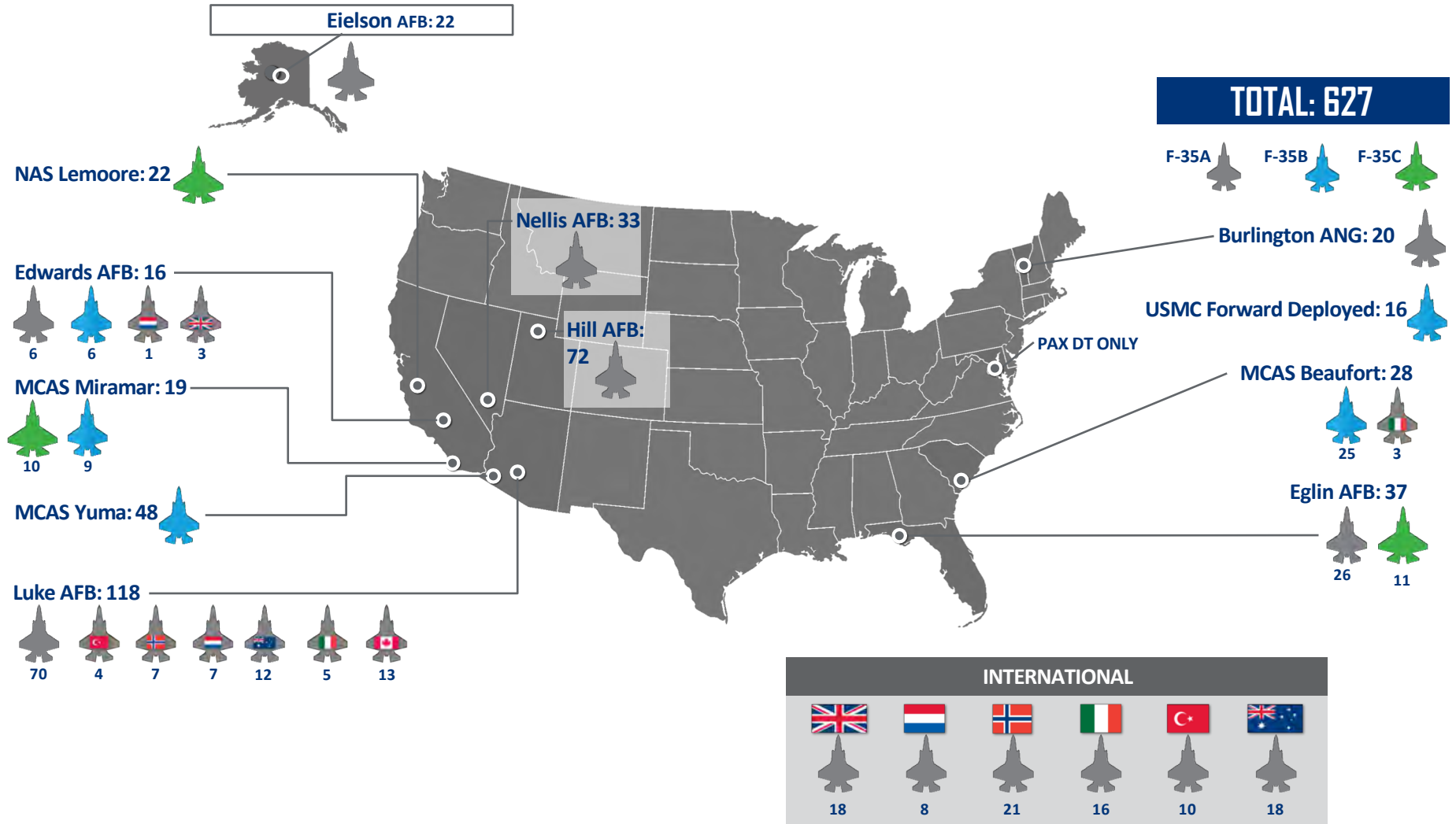
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F-35 BED DOWN THROUGH 2020



Libertas Vel Mor



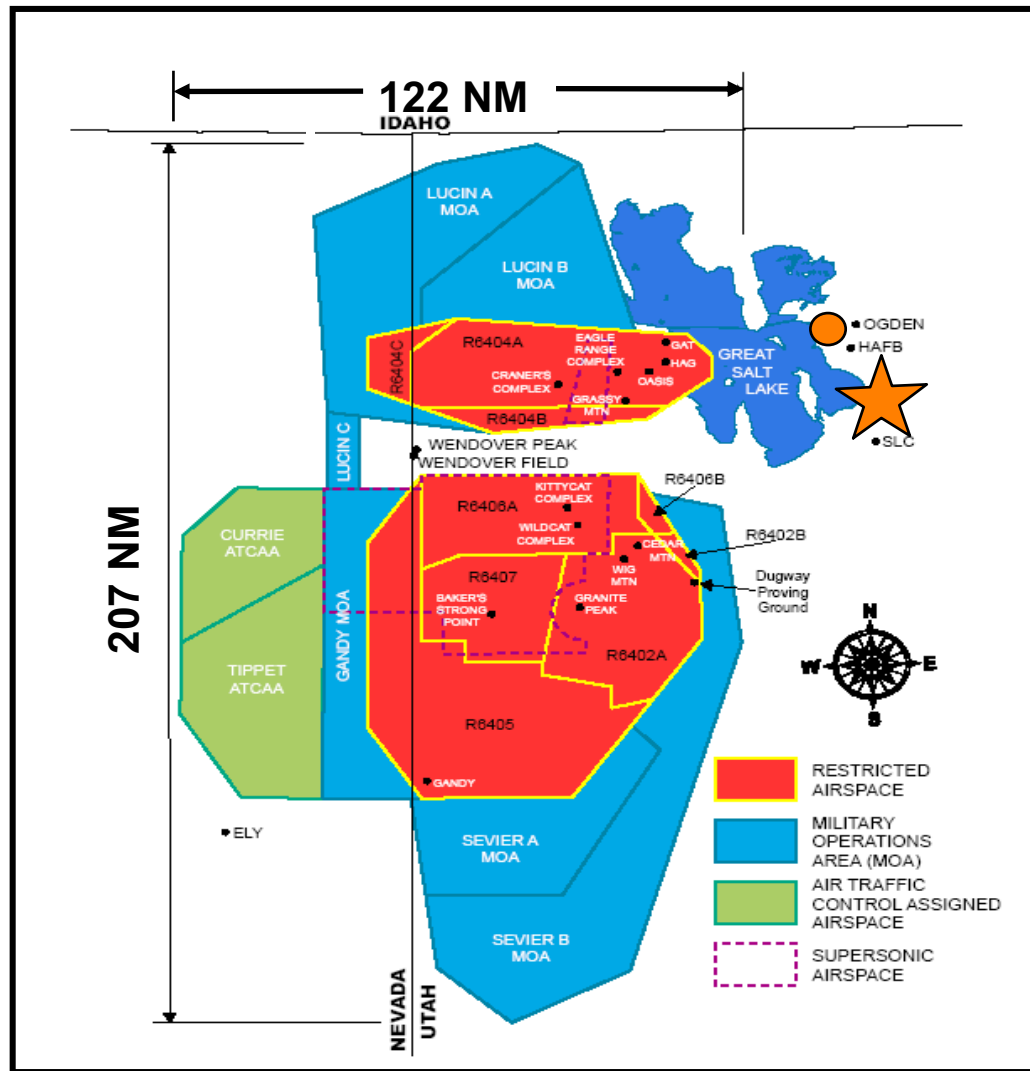
Fly, Fight, Win!



UTTR Airspace



Libertas Vel Mor



Total airspace
13K sq nm
Restricted airspace
6K sq nm

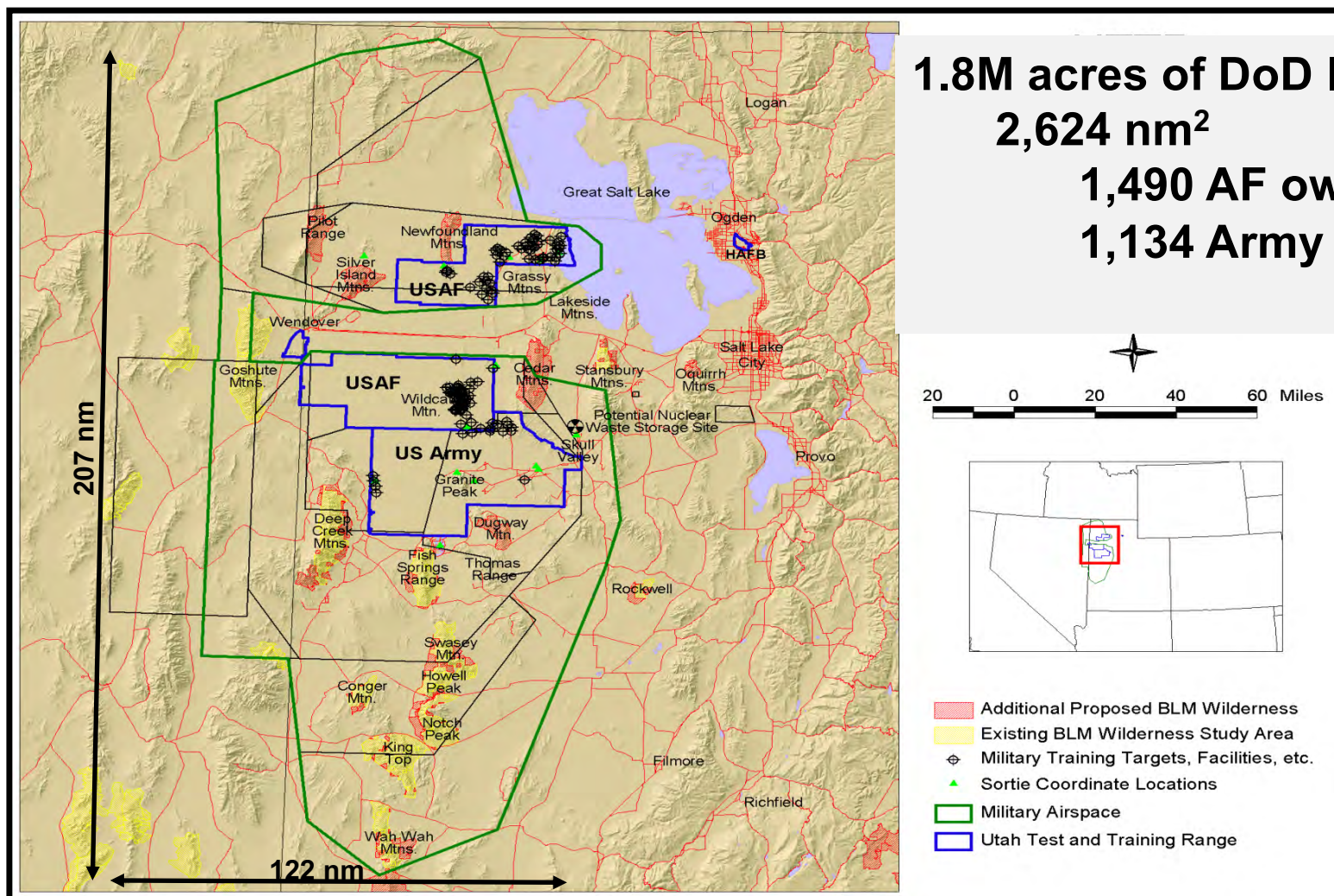
Fly, Fight, Win!



DOD Land



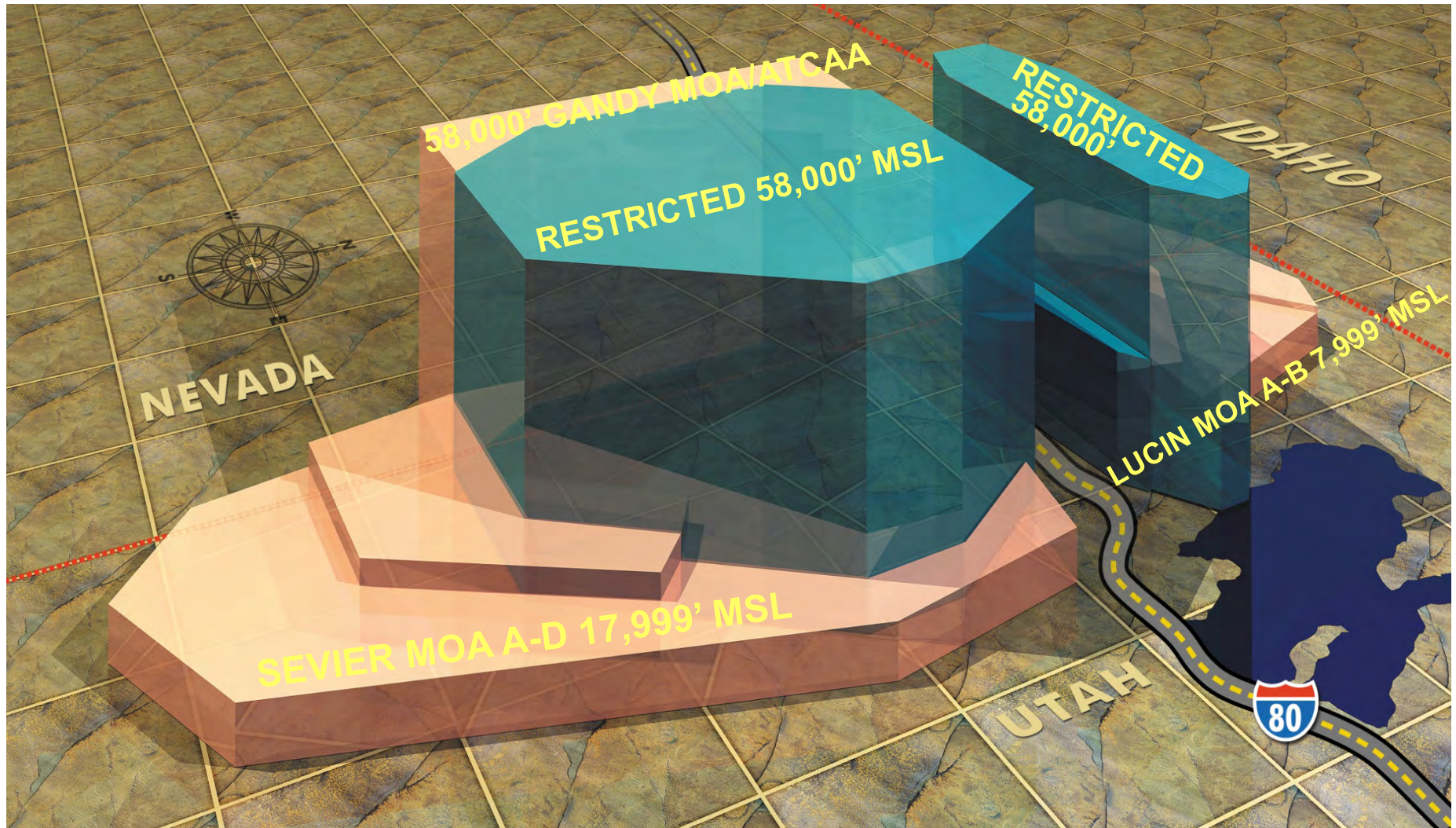
Libertas Vel Mor



Fly, Fight, Win!



Libertas Vel Mor



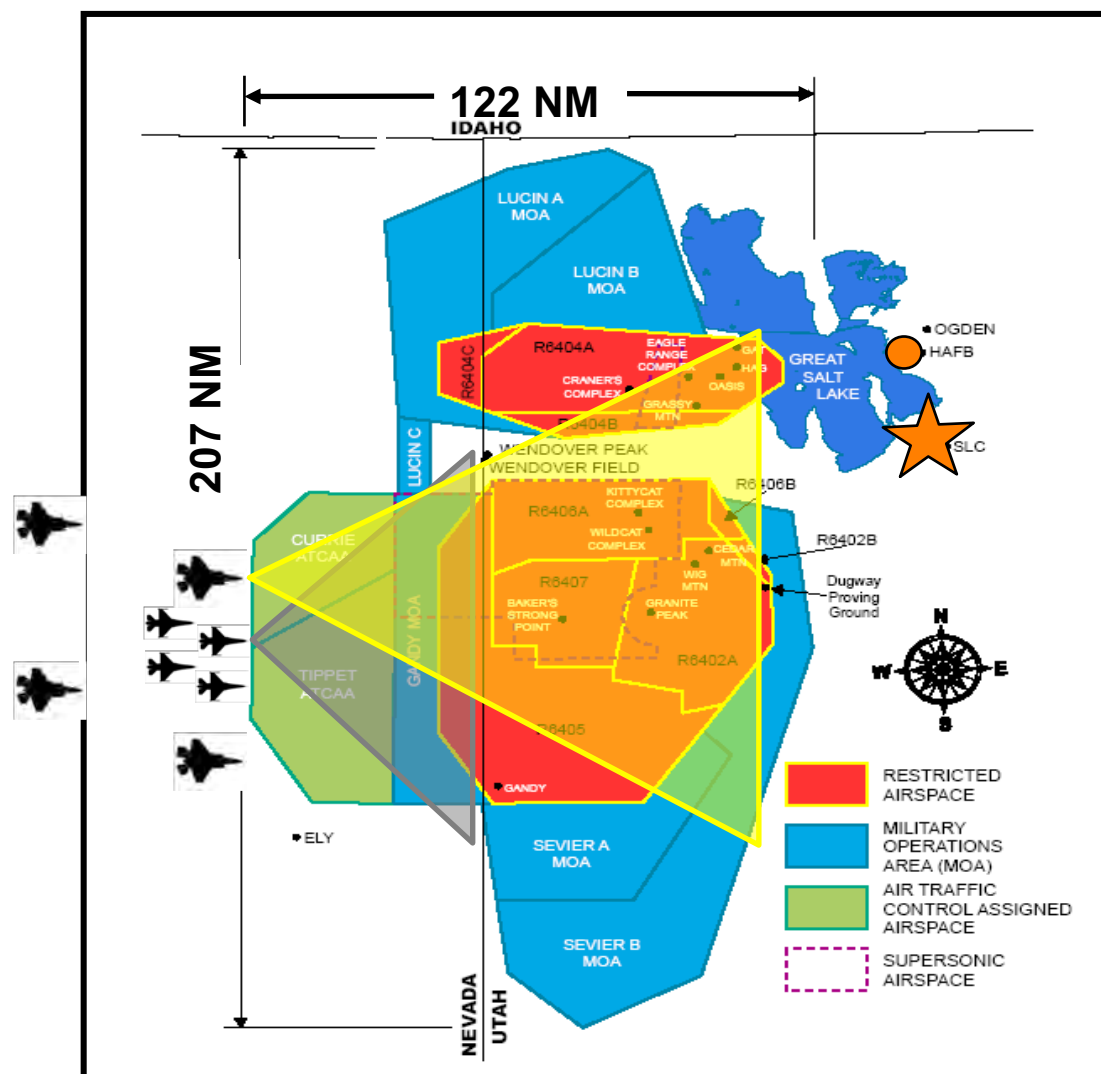
Fly, Fight, Win!



UTTR Airspace Future



Libertas Vel Mor



Total airspace
13K sq nm
Restricted airspace
6K sq nm

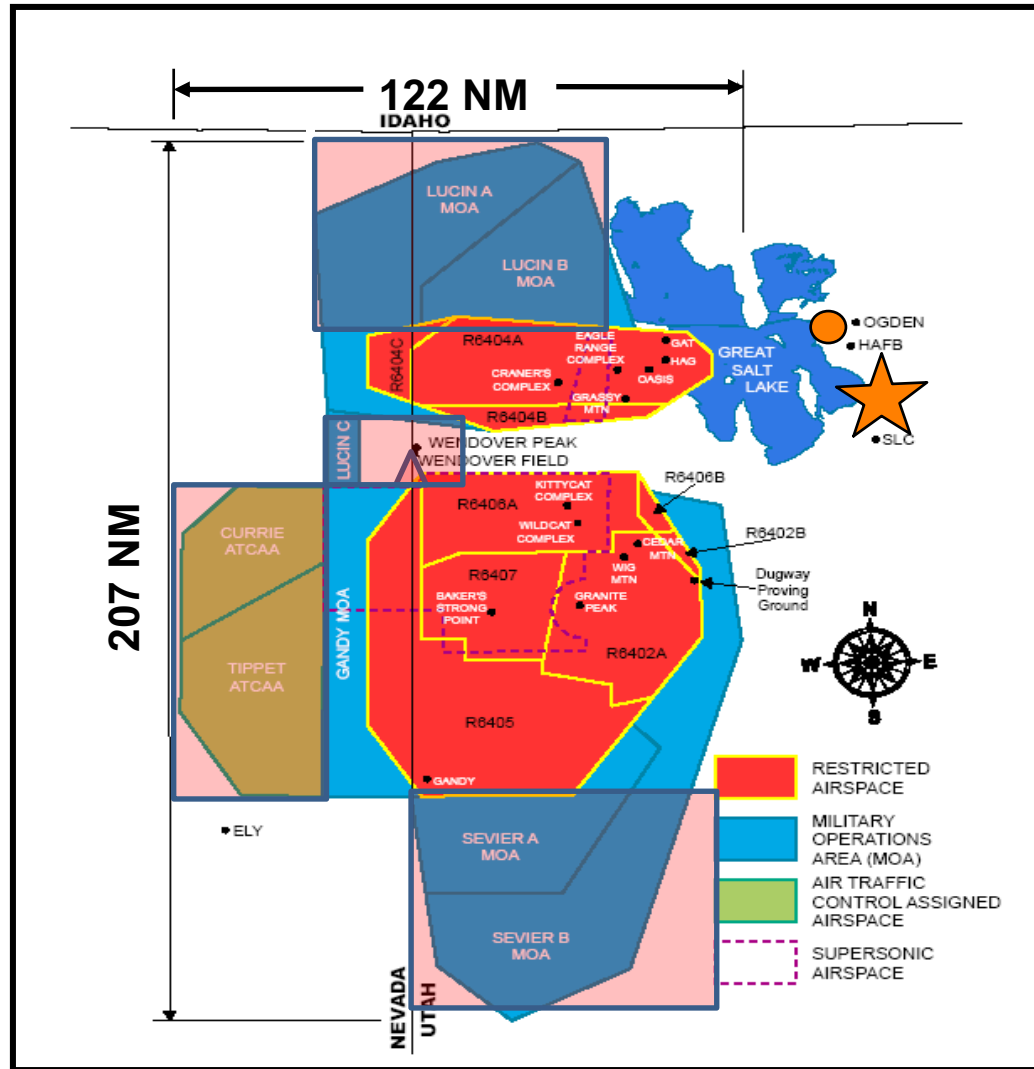
Fly, Fight, Win!



UTTR Airspace Modernization



Libertas Vel Mor



UTTR Airspace Changes

In the process:

- Lucin ALTRV conversion (SFC-28k)
- R6401 (Drone Airspace)

Future Considerations:

- Addition of Lucin F (air bridge, 10-18k)
- Increase Sevier ATCAA (SFC-28k)
- Expansion of White Elk MOA (SFC-18k)

Fly, Fight, Win!



National Range Challenges



Libertas Vel Mor

- National Defense Strategy / National Security Strategy have defined our new challenges as near peer threats
 - Test & train against the most advanced & lethal threats; not the most prolific.
 - Generate a contested / dense electromagnetic spectrum (EMS)
- Airspace extremely confined for advanced aircraft / threats
- EM Spectrum interference

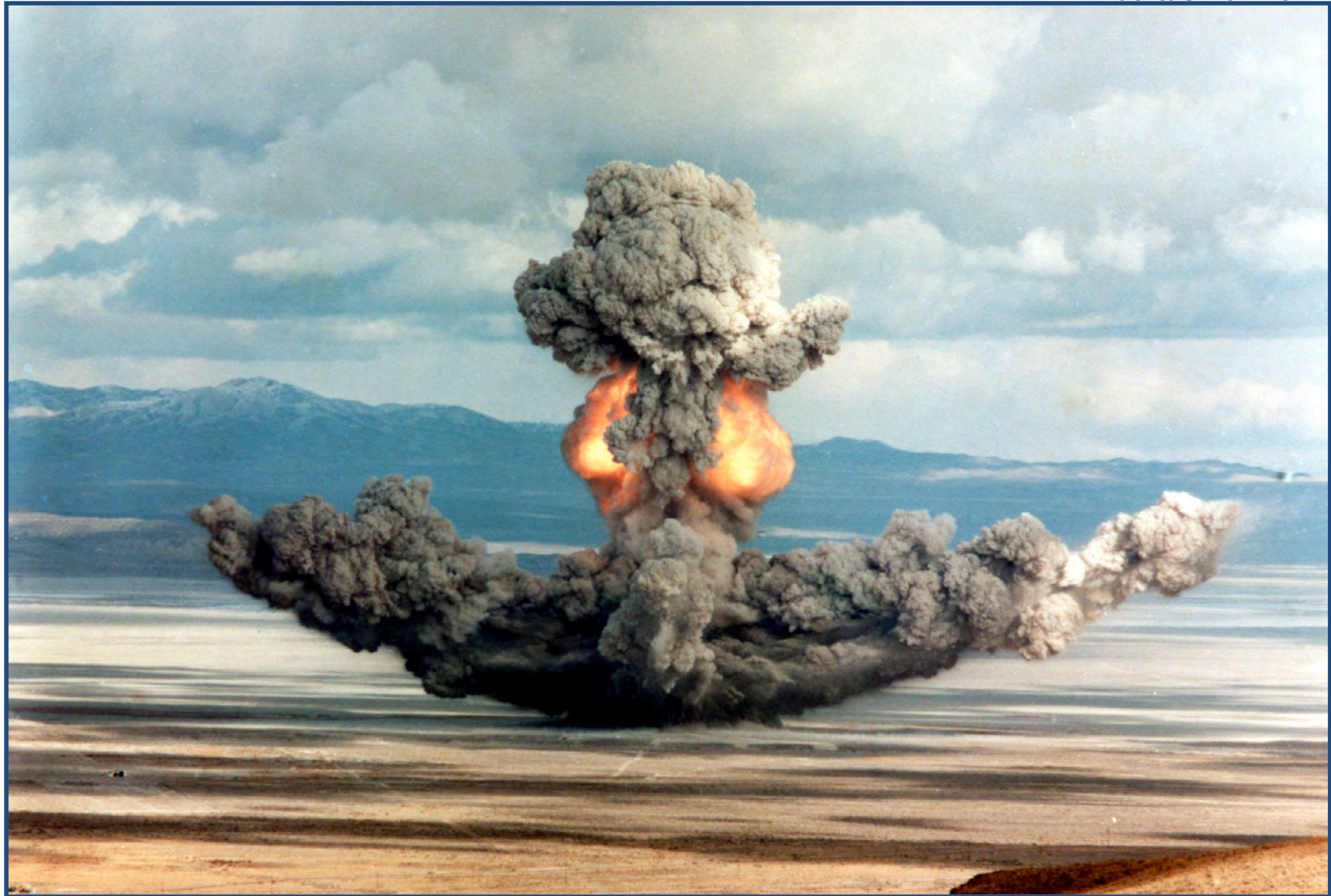
Fly, Fight, Win!



Questions



Libertas Vel Mors



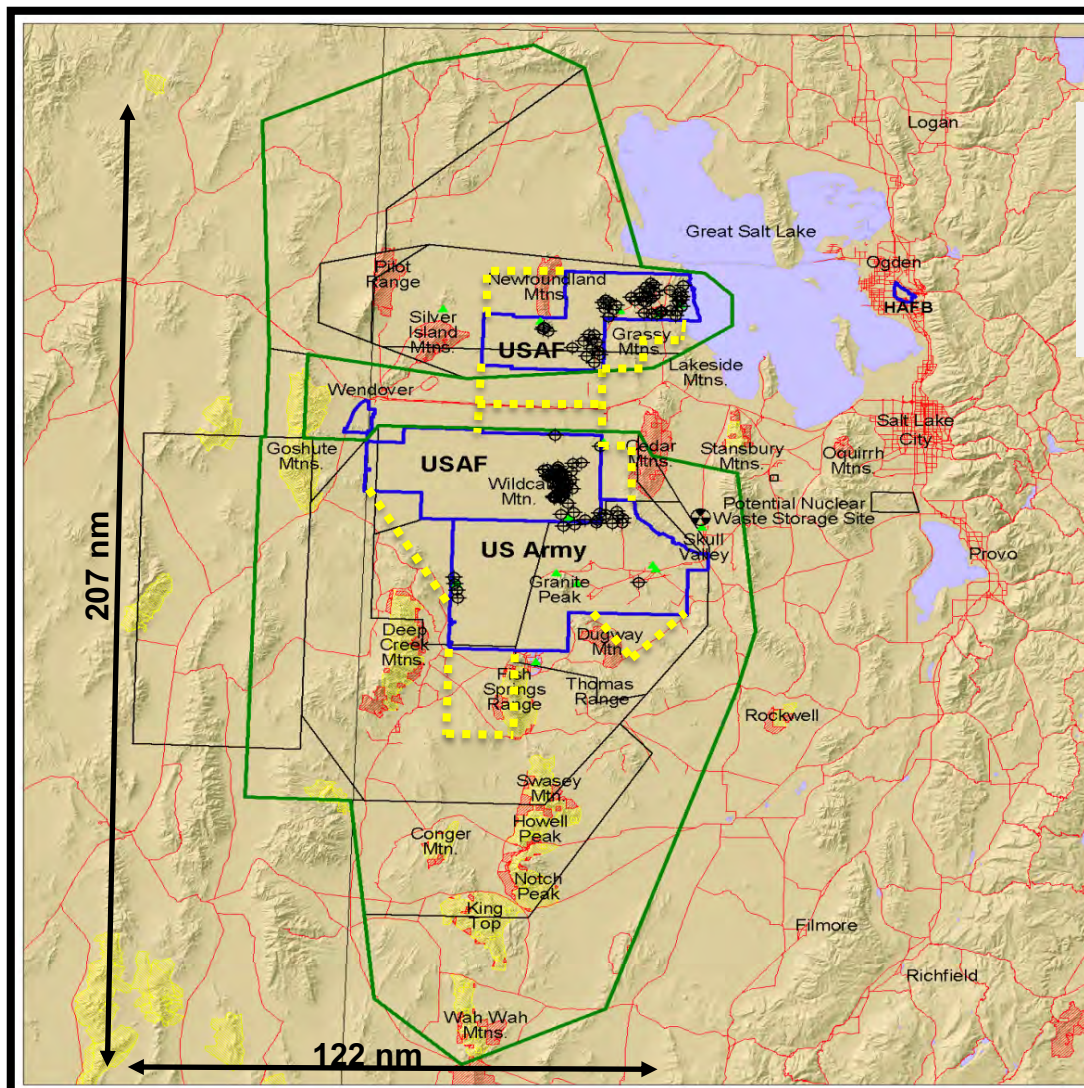
Fly, Fight, Win!



UTTR / Buffer Zones



Libertas Vel Mors



UTTR

1.8M acres of DoD lands
2,624 nm²
1,490 AF owned
1,134 Army owned



- Additional Proposed BLM Wilderness
- Existing BLM Wilderness Study Area
- Military Training Targets, Facilities, etc.
- Sortie Coordinate Locations
- Military Airspace
- Utah Test and Training Range

Fly, Fight, Win!

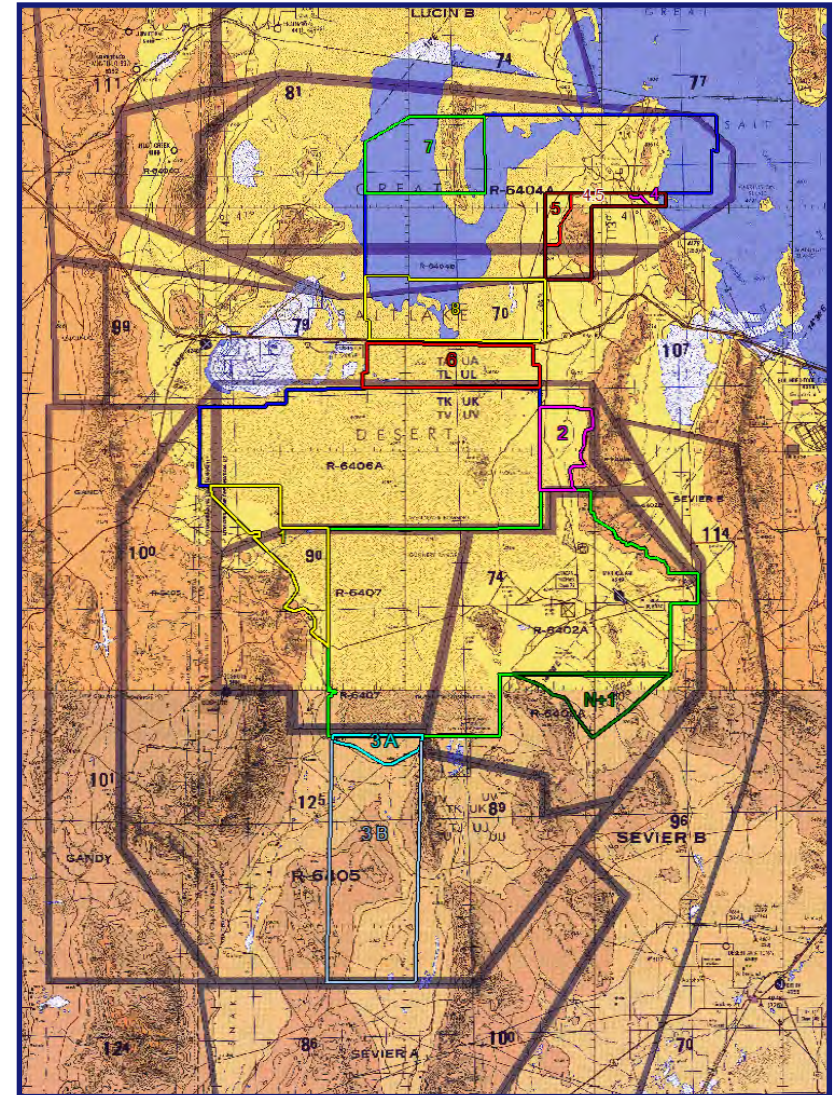


UTTR Legislation – NDAA 17



Libertas Vel Mor

- UTTR Encroachment Prevention Act
 - 8 Buffer Zones
 - 100 cumulative hrs/yr
 - 30 - 90 days' notice
 - No weekends/Fed Holidays
 - Resource Mgt Group
- Working



Fly, Fight, Win!



Major Range Test Facility Base



Libertas Vel Mor

- Designated/governed via DoD Directive 3200.11
 - “Core set of DoD test and evaluation infrastructure that must be preserved as a national asset to support the DoD acquisition system”
- Can be used by other DoD users, USG agencies, state/local governments, foreign govts and commercial entities
- Financed through appropriated and user charges
- Some others (24 total in DoD):

Air Force Flight Test Center* (Edwards)	China Lake*
Nevada Test & Training Range (NTTR)*	Point Mugu
West Desert Test Center (DPG)	White Sands
Patuxent River	Yuma
Pacific Missile Range	Kwajalein Atoll

*J-TECH Contract Annexes

Fly, Fight, Win!

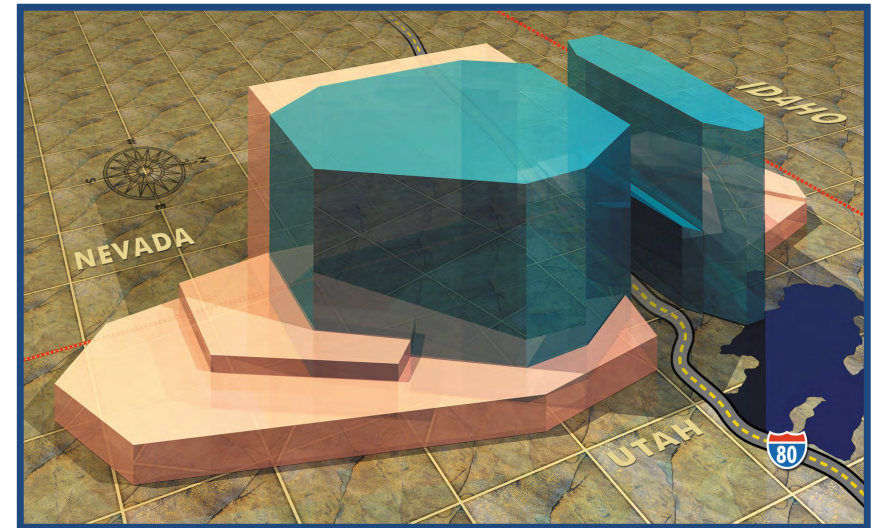


UTTR Key Attributes



Libertas Vel Mors

- Large DoD-owned overland airspace (19K sq miles)
- Largest US overland weapon safety footprint
 - Only 10K+ routine explosion range (up to 500K tested)
 - Only High/Fast JDAM approved range
 - Only USAF overland Cruise Missile test range
- Large block of supersonic airspace
- Full spectrum range
 - Surface to 58,000 feet
 - Emitters and instrumentation
- Minimal encroachment issues
- Two emergency airfields
- Great Political Support



The UTTR is a “National Treasure”

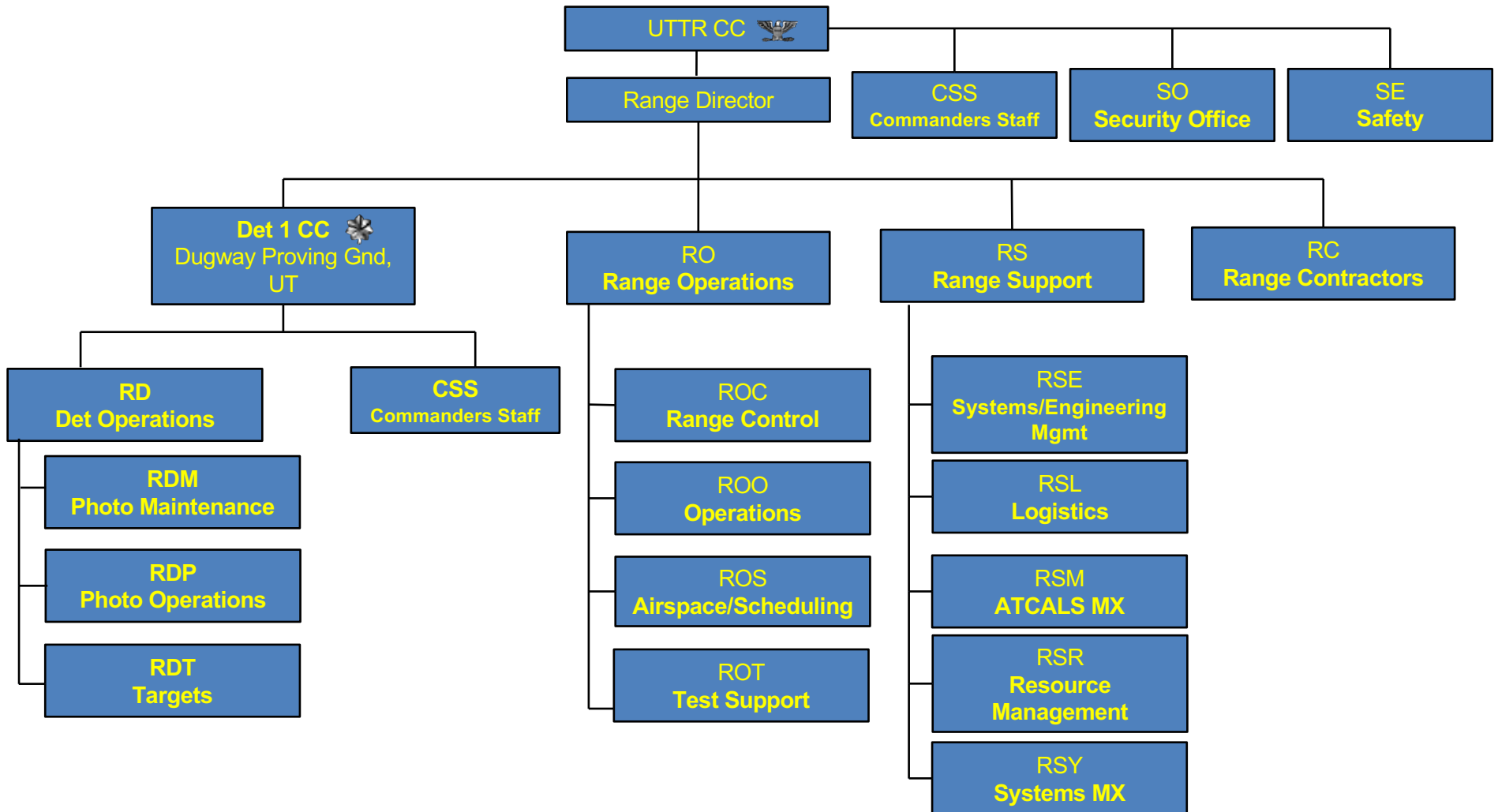
Fly, Fight, Win!



UTTR Organization (New)



Libertas Vel Mor



Fly, Fight, Win!



UTTR Capabilities

“Fully instrumented Test Range”



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- Real time Test Data/Telemetry
 - Time/Space/Position on weapons in flight via 2 g-band test radars
 - High speed digital photography/video
- Telemetry (L/S/P/C band)
- Enhanced Flight Termination System
- FCA vans – freq sniffers
- Airspace Control (AOC)
 - FAA Certified ATC
 - GCI
 - 3 x ATC ASR-9 radars
- Mission Control (MCC)
 - Real time mission/safety oversight



Fly, Fight, Win!



UTTR Challenges



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Push:

- Manpower:
 - Undermanned by 28 for **current** mission
 - Need total of 53 for WSEP mission increase
 - Significantly more for NTTR additional mission/hours absorption
- ROC / Live, Virtual, Constructive Framework needed now...
...or we can build it ourselves
- OTI / Red threat system development (slow & expensive):
 - 5 years to determine threat (intel), 10+ years to execute (DoD acquisition)
 - Extremely expensive and more sophisticated than much of our blue force
 - Air threat has same limitations

Support:

- Airspace / FAA:
 - The transition of airspace takes too long
 - Civil airspace is congested & prohibitive to necessary contested EMS environment
- Cyber vulnerability:
 - Unfunded but mandatory requirement
 - Need cyber work force to bolster security / defense

Fly, Fight, Win!