# **REDAC / NAS Ops**



Enterprise Human Factors BLI Number: 1A12B0/1A11B0 Presenter Name: Tara Holmes (ANG-C1) Date: September 1, 2020

## Review of FY 2020 - 2023 Proposed Portfolio

## Enterprise Human Factors Overview

#### What are the benefits to the FAA

 Enterprise human factors research investigates areas that have effects across NAS domains, systems, and programs. The program provides integrated guidance on human performance considerations to concept development teams, validation teams, and/or implementation teams. A primary focus is research that furthers successful integration of systems developed and deployed to enable NextGen concepts.

#### What determines program success

- Early identification of potential human performance issues and mitigation strategies that can support the usability, acceptability, and safety of NextGen concepts and systems.
- Results provided that can be used to improve individual program's development, validation, and implementation activities, though there are no formal dependencies to specific programs.

## Enterprise Human Factors Program Support

### **People:**

• Program Manager: Karl Kaufmann

### Laboratories:

- ANG-E25 Human Factors Branch, Aviation Research Division Research and Development Human Factors Laboratory
- MITRE Center for Advanced Aviation System Development



## Enterprise Human Factors – Accomplishments in FY20

### •TBO Training Analysis Report - 03/2020

•Provided an assessment of the current ("as is") TBO operations and training, and the desired ("to be") states of TBO operations and training, to establish the operational and training gaps.

### •Current State of Knowledge of TBO and Traffic Management Unit (TMU) Operations - 05/2020

•Provided the current state of knowledge of TBO operations and TMUs at all facility types. It includes literature review and interviews with TBO Implementation teams and applicable SMEs, to define knowledge gaps, known TBO impacts, and key operational scenarios to consider.

## **Anticipated Research in FY21**

#### **Planned Research Activities**

- TBO Impact on TMU Phase 1
  - Lab Method Enroute and terminal
  - Cognitive Modeling Method Enroute only
- Human Factors of Highly Automated Vehicles (HAV) Phase 1
  - Implications for ATC
- Regional TMU Coordination Practices
- TBO Training Model
- Human Factors Impacts of Large ATC Displays
  - Focus on visually-induced motion sickness and visual fatigue

#### **Expected research Products**

- TBO Impact on TMU Phase 1
  - Research Plan Lab Method
  - Final Reports
    - Lab Method
    - Cognitive Modeling Method
- Research plan to investigate HAV human factors implications
- Report on visually induced motion sickness and visual fatigue with large ATC displays

## **Anticipated Research in FY22**

### **Planned Research Activities**

- Human Factors Impacts of Highly Automated Vehicles Phase 2
  - Execution of phase 1 research plan
- TBO Training Model and Plan
- TBO Impact on Traffic Manager Unit (TMU)
  - Cognitive Model Method Phase 2
  - Laboratory Method Phase 2

### **Expected research Products**

- Human Factors Effects on Air Traffic Control of Highly Automated Vehicles
- Plan and schedule for development of TBO training enhancements to address shortfalls
- Report on TBO Impact on TMU Cognitive Model Method Phase 2
- Report on TBO Impact on TMU Laboratory Method Phase 2

## **Emerging FY23 Focal Areas**

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### Trajectory-Based Operations

- ATC transformation
- Traffic Management Unit effects

### New Traffic Management Concepts

- UTM
- Other third-party traffic management services

## **Enterprise Human Factors**

#### **Research Requirements**

- Provide integrated enterprise HF guidance to:
- Increase the utilization rate of concepts and systems among controllers
- Ensure controller acceptance of concepts and systems
- Increase safety through the mitigation of known human factors risks
- Decrease controller workload through improved tools and techniques

#### FY 2023 Planned Research

- Continue investigation of TBO effects
- Continue investigation of integration of new traffic management concepts

#### **Outputs/Outcomes**

- HF Assessments, such as to determine operational context, NAS interactions, human actors, human factors risks and opportunities
- Enterprise level HF guidance, such as design/procedure/training recommendations for programs to consider

#### **Out Year Funding Requirements**

F&E	FY20	FY21	FY22	FY23	FY24	FY25
	\$1.5M	\$1.5M	\$1.5M	\$1.5M	\$1.5M	\$1.5M