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Flight Evaluation and Validation of RNP AR/SAAAR Instrument Flight Procedures

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OVERVIEW

- ◆ EVALUATION & VALIDATION GUIDANCE
- ◆ RNP AR/SAAAR APPROACH PROCEDURES
- ◆ FLIGHT SIMULATOR EVALUATION
- ◆ FLIGHT OBSTACLE ASSESSMENT
- ◆ FLIGHT VALIDATION

EVALUATION & VALIDATION GUIDANCE

- ◆ ICAO PBN MANUAL; DOC 9613
- ◆ FAA DRAFT NOTICE : FLIGHT VALIDATION (FV) OF SATELLITE-BASED NAVIGATION (PBN) INSTRUMENT FLIGHT PROCEDURES (IFP) N 8200.FV
- ◆ SUPPORTING GUIDANCE IN PANS OPS; DOC 8168

RNP AR OR SAAAR

- ◆ SPECIAL AUTHORIZATION REQUIRED
- ◆ FAA AUTHORIZATION: AC 90-101
- ◆ AIRCRAFT APPROVED FOR OPERATION
- ◆ FLIGHT CREW MUST BE QUALIFIED
- ◆ SIMILAR ILS CAT II/III AUTHORIZATION

RNP AR or SAAAR

- ◆ GNSS BASED
- ◆ NAV PERFORMANCE: 95% ACCURACY
- ◆ OBSTACLE CLEARANCE: 2 X RNP
- ◆ FLIGHT PATH FLEXIBILITY
- ◆ AIRBORNE MONITORING AND ALERTING

RNP AR or SAAAR (cont)

- ◆ RNP VALUES SET MATCH PROCEDURE
- ◆ VEB: BASED ON BARO ERROR MODEL
- ◆ CIRCULAR CURVED PATH (RF) SEGMENT
- ◆ MA GRAD MAY BE GREATER THAN 40:1
- ◆ MA CAN BE COMPLEX PATH AS WELL

RNP AR or SAAAR (cont)

- ◆ BASED ON 'CONTAINMENT'
- ◆ 2 X RNP OBSTACLE CLEARANCE
- ◆ 1 X RNP LATERAL MONITORING
- ◆ 75 FEET VERTICAL MONITORING (FINAL)

RNP AR RISK MANAGEMENT

- ◆ FLIGHT CREW TRAINING
- ◆ FLIGHT CREW PROCEDURES
- ◆ CONTAINMENT MONITORING
- ◆ AIRCRAFT NAVIGATION PERFORMANCE
- ◆ PROCEDURE DESIGN

FAA DRAFT FV POLICY N 8200 FV

- ◆ POLICY IN FINAL COORDINATION
- ◆ FLIGHT SIMULATOR EVALUATION
- ◆ FLIGHT OBSTACLE ASSESSMENT
- ◆ FLIGHT VALIDATION POLICY & GUIDANCE

FLIGHT SIMULATOR EVALUATION

- ◆ REQUIRED FOR RNP AR/SAAAR PROC
- ◆ CAN BE WAIVED BY AFS (NON COMPLEX, PREVIOUSLY EVALUATED, ETC)
- ◆ LEVEL C OR D SIMULATOR
- ◆ VALIDATE DATA BASE CODING

FLIGHT SIMULATOR EVALUATION (CONT)

- ◆ COMPLIANCE WITH CRITERIA
- ◆ RF TURNS: VALIDATE SPEEDS, WINDS, BANK ANGLE LIMITS
- ◆ CONFIGURATION MANAGEMENT
- ◆ MISSED APPROACH: RF, CLIMB GRAD, ETC

FLIGHT SIMULATOR EVALUATION (CONT)

- ◆ OVERALL FLYABILITY
- ◆ DESIGN OR DATABASE ANOMALIES
- ◆ OPERATIONAL ISSUES
- ◆ GPWS ALERTS

OPTIONAL DESK TOP SIMULATOR

- ◆ AIRCRAFT FLYABILITY
- ◆ FMS COMPATIBILITY
- ◆ DATA BASE CODING
- ◆ PROCEDURE DESIGN COMPLIANCE
- ◆ OPTIONAL BUT REDUCES REWORK

FLIGHT OBSTACLE ASSESSMENT

- ◆ AIRBORNE ASSESSMENT REQUIRED
- ◆ VALIDATE RELEVANT OBSTACLES
- ◆ NOTE UNDOCUMENTED OBSTACLES
- ◆ VERIFY OUTSIDE OF 2 X RNP
- ◆ MAY VERIFY WITH ON SITE CHECK

FLIGHT VALIDATION

- ◆ FLIGHT VALIDATION REQUIRED
- ◆ PERFORMED BY FV QUALIFIED CREWS
- ◆ AIRCRAFT WITH POSITION REF DATA SYS
- ◆ AIRCRAFT MUST BE RNP SAAAR CAPABLE
- ◆ REVIEW OBSTACLE/SIM ASSESSMENTS

FLIGHT VALIDATION (cont)

- ◆ VERIFY GROUND TRACK AS INTENDED
- ◆ VERIFY COMPLIES WITH CRITERIA
- ◆ VALIDATE ACCEPTABLE FLYABILITY
- ◆ VERIFY DATABASE
- ◆ NOTE ANOMALIES WITH FMC & DESIGN

FLIGHT VALIDATION (cont)

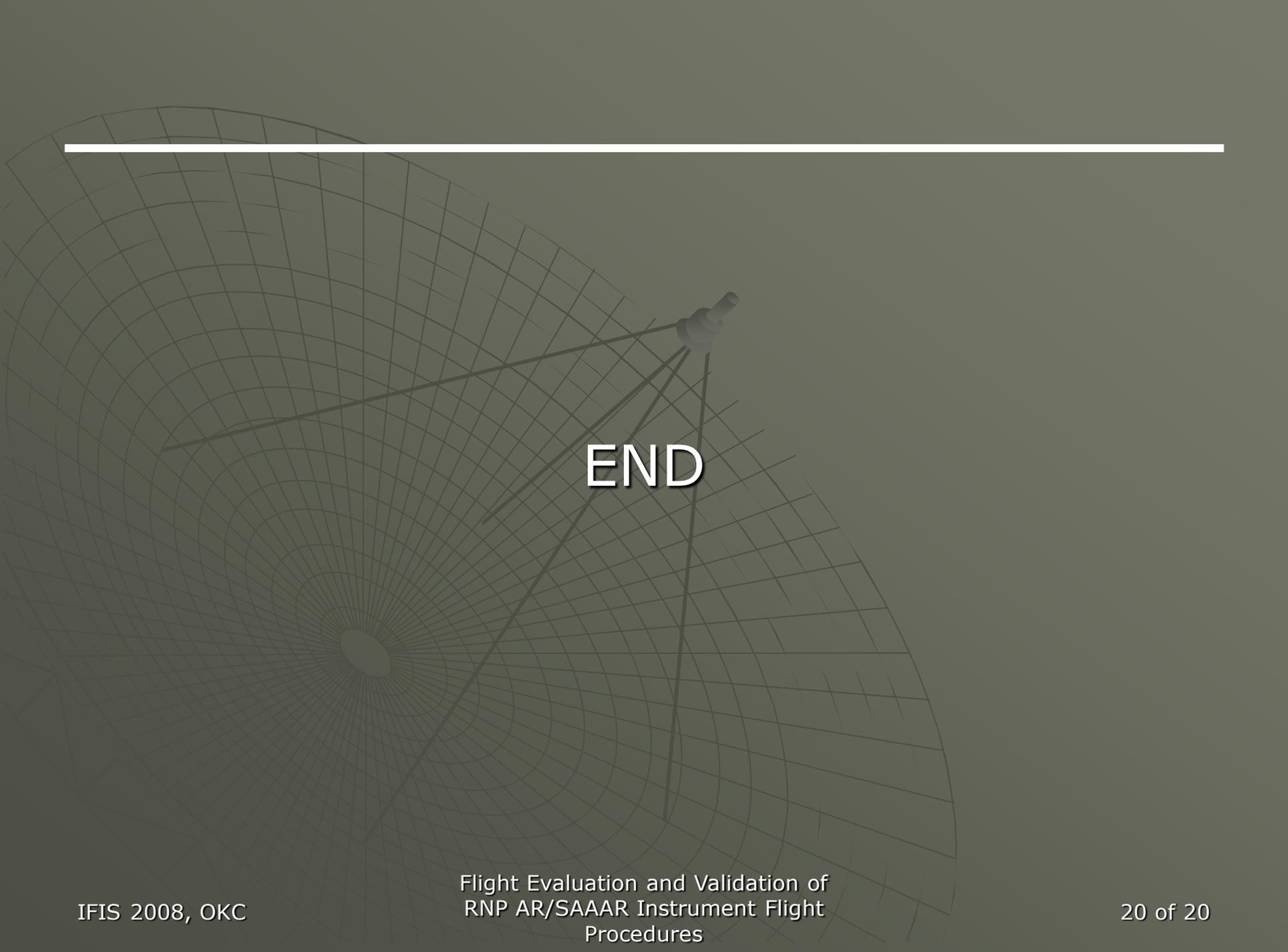
- ◆ VERIFY AIRPORT AND INFRASTRUCTURE
- ◆ VERIFY COMMUNICATIONS & SURV
- ◆ VALIDATE CHART AND CHART NOTES
- ◆ VALIDATE CONTROLLING OBSTACLES
- ◆ VALIDATE CONTROLLING OBS

FLIGHT VALIDATION (cont)

- ◆ NOTE EGPWS ALERTS/WARNINGS
- ◆ VERIFY THE FLIGHT PATH ANGLE
- ◆ VALIDATE RF BANK ANGLES & WIND TOL
- ◆ VALIDATE SPEED REQ AND CLIMB GRAD
- ◆ TEMPERATURE LIMITS FOR BARO VNAV

FLIGHT VALIDATION (cont)

- ◆ IDENTIFY OPERATIONAL ISSUES
- ◆ GUIDANCE FOR FLIGHT CREW
- ◆ FLIGHT TRACK TRACE VS INTENDED TRK
- ◆ VALIDATE CHART NOTES
- ◆ DOCUMENT FV



END