

Publications and Training Solutions

Course Syllabus: 523-0808188

COURSE TITLE: Multiscan™ Weather Radar (WXR-2100)
Operator/Pilot Training

PREREQUISITES:

Students should have a basic knowledge of aircraft avionics systems and a working command of the English language. Students should be familiar with MS Windows® based Operating Systems.

PURPOSE:

This course provides training to familiarize pilots with the fundamentals of aviation weather detection and basic operation of the WXR-2100 MultiScan™ Fully Automatic Weather Radar System.

OBJECTIVES: Upon completing this course, the student should be able to:

1. Briefly describe the fundamentals of weather detection, including weather reflectivity, thunderstorm formation, turbulence detection, and windshear detection.
2. Describe the purpose of the various switches, knobs, and control settings on the Weather Radar Control Panels.
3. Describe the signification differences between Airbus and Boeing Control Panels.
4. Recognize Electronic Flight Information System (EFIS) display annunciations in the Manual and Automatic modes for Airbus and Boeing aircraft.
5. Describe operation of the WXR-2100 in the Manual and Automatic modes, including activation of System Test.

COURSE LENGTH: 2 Hours

REFERENCES:

1. Collins WXR-2100 MultiScan™ Radar Fully Automatic Weather Radar
Operator's Guide 523-0780944

Publications and Training Solutions

Course Syllabus: 523-0808188

COURSE OUTLINE

0. Introduction

- A. Welcome To Rockwell Collins eLearning

1. Aviation Weather

- A. Introduction
- B. Reflectivity – Characteristics of Precipitation
 - i. Thunderstorm Reflectivity
 - ii. Thunderstorm Composition
 - iii. Effects of Antenna Tilt Angle on Reflectivity
- C. Thunderstorm Development
 - i. Airmass Thunderstorms
 - ii. Multi-cell Thunderstorms
 - iii. Steady-state Thunderstorms
 - iv. Gust Front
 - v. Oceanic Thunderstorms
 - vi. Squall Lines
- D. Microburst and Windshear
- E. Weather Cells
 - i. Normal
 - ii. Severe
- F. Hazardous Weather
- G. Non-Reflective Weather
- H. Summary/Test

2. How Radar Works

- A. Introduction
- B. Factors Affecting Weather, Turbulence, and Windshear Detection Performance

Publications and Training Solutions Course Syllabus: 523-0808188

- i. Calibrated Gain Scheme
- ii. Antenna Characteristics
- iii. Radar Beam
- iv. Pulse Width and Beam Attenuation
 - 1. Sensitivity Time Control
 - 2. Long Range Color Enhancement

- C. Path Attenuation Compensation
- D. Radome
- E. Doppler Turbulence
- F. Windshear Alerts and Alert Regions
 - i. Airbus
 - ii. Boeing
- G. Alien Radar
- H. Summary/Test

3. Introduction to Multiscan™

- A. Introduction
- B. WXR-2100 Operational Overview
 - i. Dual-Beam System
 - ii. Temperature Based Gain
 - iii. Ground Clutter Suppression System
- C. Summary/Test

4. Automatic Mode

- A. Introduction
- B. Flight Deck Panels
 - i. Airbus – System Capabilities and Characteristics
 - ii. Boeing - System Capabilities and Characteristics

Publications and Training Solutions Course Syllabus: 523-0808188

- C. Multiscan™ Initialization Process
 - D. Left/Right Receiver-Transmitter Selection
 - E. Predictive Windshear Operation
 - F. Display Annunciations
 - G. Mode Controls
 - H. Test Procedures
 - I. Threat Weather
 - i. Overscan Prevention
 - ii. OverFlight Protection
 - J. Windshear Detection Features
 - K. Summary/Test
- 5. Manual Mode**
- A. Introduction
 - B. Manual Mode Selection
 - i. Airbus Control Panel
 - ii. Boeing Control Panel
 - C. Ground Clutter Suppression Controls
 - D. Tilt Control Settings
 - i. Low Altitude Tils
 - ii. Takeoff Tilt
 - iii. Descent Tilt
 - iv. Mid-Altitude Tilt
 - v. High Altitude Tilt
 - E. Overscan Prevention Techniques
 - F. Summary/Test

Publications and Training Solutions

Course Syllabus: 523-0808188

EQUIPMENT TYPE:

EQUIPMENT	NOMENCLATURE	PART NUMBER
Receiver/Transmitter (Boeing)	WRT-2100	822-1710-001 / 002 / 301 / 311
Receiver/Transmitter (Airbus)	WRT-2100	822-1710-201 / 202 / 203 / 204 / 213 / 214 / 401 / 411
Control Panel	WCP-701	622-5129-801 / 802
Control Panel	WCP-702	622-5130-801 / 820 / 830