PPL Theory
Aeronautical Radio Operation

CAE Oxford
Aviation Academy

RARO 6 - Transponders

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2. Related Documents

Related Documents	Document Identification

RARO 6 – Transponders

Amendments made to this document since the previous version are listed below. All amendments to this document have been made in accordance with CAE OAAM's document management procedure.

Slide	Changes

WHAT IS IT?

Transponder

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- A transponder is a radar device fitted to aircraft operating in CTA

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BASED ON THE "IFF" SYSTEM USED IN WORLD WAR II

Transponder

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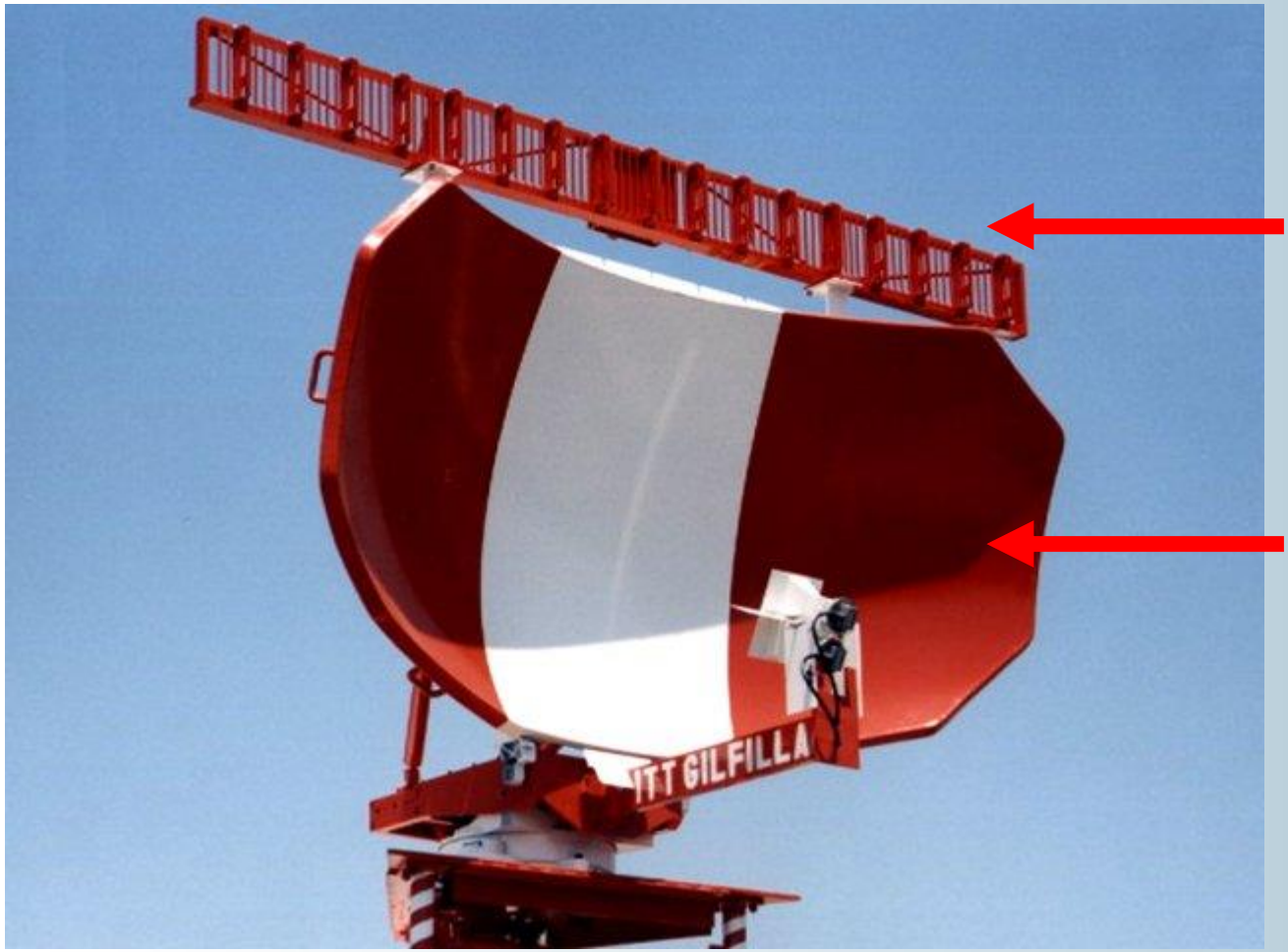
- It allows ATC to identify individual aircraft more easily on their radar screen

- By setting certain “squawk” codes, ATC can identify different aircraft operating in different airspace

HOW DOES IT WORK?

Transponder – how does it work?



Secondary Surveillance Radar (SSR)

ATC Primary Radar

Transponder

- ATC SSR sends out a pulse signal that “paints” your aircraft
- The transponder will send a reply signal back to the SSR station
- Using the time taken for these pulses to travel, the location of the transponder (and hence the aircraft) can be calculated

QUESTIONS/COMMENTS?

WHAT IS THE PURPOSE OF A TRANSPONDER?

Transponder

- Allows ATC to identify individual aircraft and the operations they are conducting

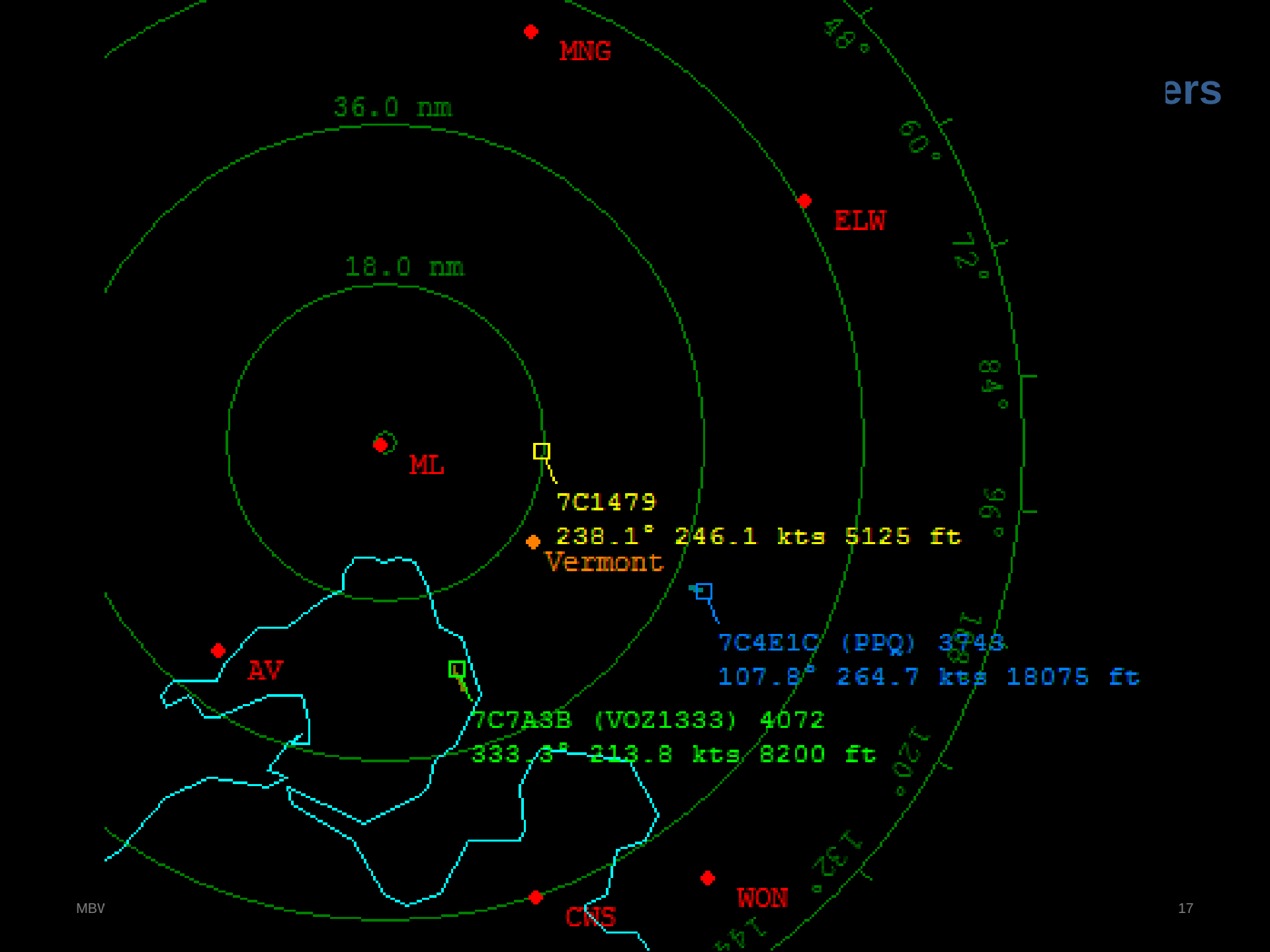
- Aircraft “painted” by primary radar would appear as a simple “blip” or “ . “ on a radar screen

- SSR on the other hand, will pick up the aircraft’s specific transponder signal or “squawk,” which is much stronger. It will also allow the controller to view other information, such as:

  - aircraft altitude

  - speed

  - track


MNG
36.0 nm
ELW
18.0 nm
ML
7C1479
238.1° 246.1 kts 5125 ft
Vermont
7C4E1C (PPQ) 3948
107.8° 264.7 kts 18075 ft
AV
7C7A3B (VOZ1333) 4072
333.3° 213.8 kts 8200 ft
WON
CNS
48°
60°
72°
84°
96°
108°
120°
132°
144°

ers

QUESTIONS/COMMENTS?

TRANSPONDER MODES

Transponder Modes

OFF –

SBY –

ON –

Transponder Modes

OFF – Transponder is OFF

SBY –

ON –

Transponder Modes

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SBY – Transponder is warmed up and ready for use, but is not transponding

ON –

Transponder Modes

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SBY – Transponder is warmed up and ready for use, but is not transponding

ON – Transponder is on and functioning. It will operate on the code set in the windows

Transponder Modes

ALT –

TST –

IDENT –

Transponder Modes

ALT – Same as ON, but also transmitting aircraft altitude (Mode C)

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TST – Checks function of transponder

IDENT – Pushing this button means that on the radar screen, your mark will turn blue and flash 5 times. This helps ATC identify you with ease.

QUESTIONS/COMMENTS?

RADIO CALLS INVOLVING TRANSPONDERS

Transponder Modes

- ATC may require you to carry out various operations using the transponder in order to gain a better idea of who you are, where you are and what you are doing

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Squawk (code) –

Squawk Charlie –

Squawk Normal –

Squawk Standby –

Recycle Mode C –

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Squawk (code) – Select the “discrete” code on the transponder e.g. 3471

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Squawk Charlie – Select ALT on the transponder

Squawk Normal – Select ON on the transponder

Squawk Standby – Select SBY on the transponder

Recycle Mode C – Select SBY and back to ALT

QUESTIONS/COMMENTS?

TRANSPONDER CODES

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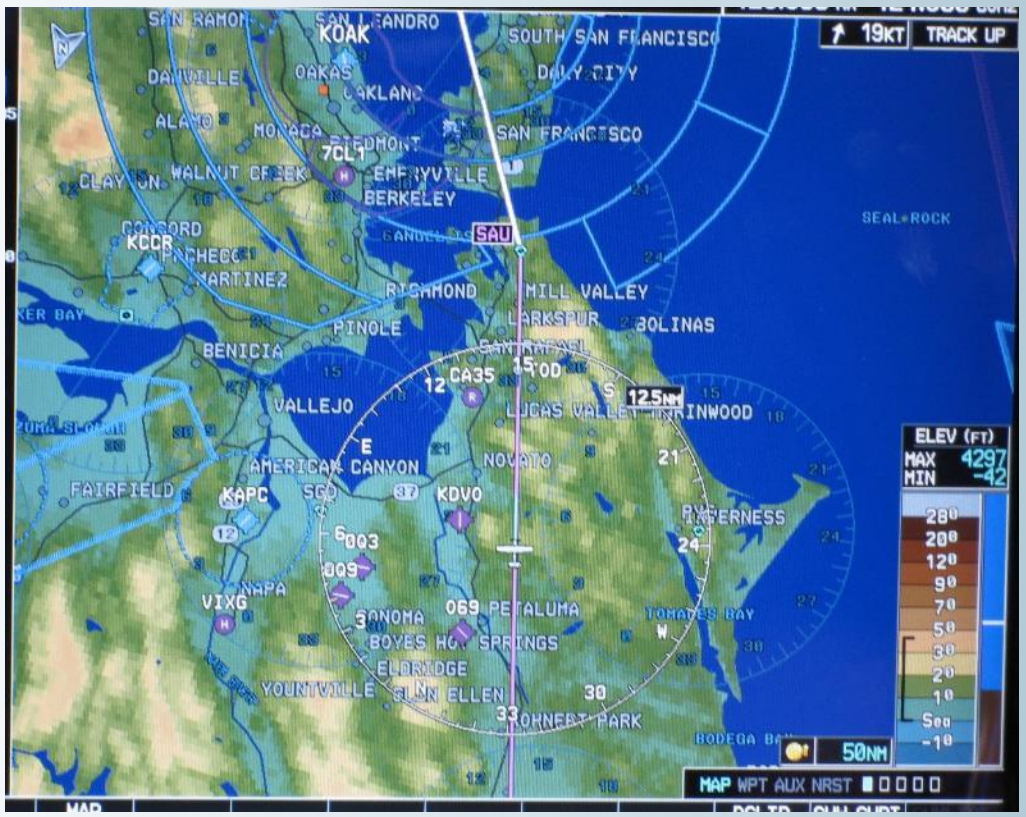

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