Based on the security case pattern provided and the domain information for ACAS Xu, the instantiated security case for ACAS Xu is created as follows:

@Assurance\_case

- G0: ACAS Xu satisfies security requirements

- C0: ACAS Xu is a collision avoidance system for UAVs focusing on preventing collisions through sensors and computing trajectories.

- C1: Security requirements are essential for protecting the system from malicious attacks that could compromise drone operations.

- J0: The assurance of ACAS Xu is based on thorough validation against security requirements.

- A0: The security requirements specifications (SRS) for ACAS Xu are assumed to be complete, adequate, and consistent.

- S0: Argue through asset protection and secure development requirements.

- G1: ACAS Xu satisfies the asset protection requirements

- A1: An asset inventory for ACAS Xu has been established, detailing all critical components.

- S1: Argue through the different stages of the system development life cycle.

- G3: Asset protection requirements are met during the architecture design phase

- C2: Describes the architecture of ACAS Xu involving its components like sensors, processors, and actuators.

- S2: Argue through deriving security threats from security requirements based on the architecture.

- J1: Ensuring that all identified threats according to specific security requirements have active mitigation strategies fulfills the SRs.

- G5: ACAS Xu architecture is protected against identified security threats (STs).

- A2: All relevant security threats to ACAS Xu have been identified and are being addressed.

- S3: Argue over each security threat.

- G0.1: ACAS Xu architecture is protected against ST1 (Tampering by GPS signal disruption).

- G0.2: ACAS Xu architecture is protected against ST2 (Spoofing by fake sensor data).

- G0.3: ACAS Xu architecture is protected against ST3 (Elevation of privileges in the planning system).

- G6: ACAS Xu architecture is validated [Undeveloped]

- C3: The validation of ACAS Xu includes both functional validation and security penetration testing.

- A3: The architectural model of ACAS Xu is well defined in formal methods.

- G4: Asset protection requirements are met during other phases [Undeveloped]

- G2: ACAS Xu satisfies secure development requirements [Undeveloped and Uninstantiated]

@End\_Assurance\_case

This instantiation fills the placeholders from the pattern with specific information relevant to the ACAS Xu system, details its architecture, assumes threats, and presents a structured argument centered on satisfying security requirements by addressing asset protection and responding to threats. Several goals are marked as undeveloped to indicate that more details are needed in these areas or that further development of the case is required.