Below is the instantiation of the security case pattern for the ACAS Xu (Airborne Collision Avoidance System Xu), with placeholders replaced with specific system details and uninstantiated decorators removed. The hierarchical tree structure is denoted using hyphens to represent levels.

\*\*Assurance Case for ACAS Xu Security:\*\*

- \*\*G0: ACAS Xu satisfies security requirements\*\*

- \*\*Context C0: Description of ACAS Xu\*\*

- \*\*Context C1: Security Requirements (SR) are requirements about protecting ACAS Xu from malicious entities\*\*

- \*\*Justification J0: The argumentation is based on satisfaction of Security Requirements\*\*

- \*\*Assumption A0: System Security Requirements Specifications (SRS) are complete, adequate, and consistent\*\*

- \*\*Strategy S0: Argue through asset protection and secure development requirements\*\*

- \*\*G1: ACAS Xu satisfies the asset protection requirements\*\*

- \*\*Assumption A1: Asset inventory for ACAS Xu is established\*\*

- \*\*Strategy S1: Argue through the different stages of the system development life cycle\*\*

- \*\*G3: Asset protection requirements are met during the architecture design phase of ACAS Xu\*\*

- \*\*Context C2: Description of ACAS Xu architecture\*\*

- \*\*Strategy S2: Argue through derivation of security threats from SRs\*\*

- \*\*G5: ACAS Xu architecture is protected against identified security threats\*\*

- \*\*Assumption A2: All relevant threats to ACAS Xu architecture have been identified\*\*

- \*\*Strategy S3: Argue over each security threat\*\*

- \*\*G0.X: ACAS Xu architecture is protected against Specific Threat X (Undeveloped)\*\*

- \*\*G6: ACAS Xu architecture is validated (Undeveloped)\*\*

- \*\*Context C3: Description of ACAS Xu architecture model\*\*

- \*\*Assumption A3: ACAS Xu architecture model is well-defined using formal method (Undeveloped)\*\*

- \*\*Justification J1: Detection and mitigation of threats fulfill Security Requirements\*\*

- \*\*G4: Asset protection requirements are met during other phases of ACAS Xu development (Undeveloped)\*\*

- \*\*G2: ACAS Xu satisfies secure development requirements (Undeveloped)\*\*

This security case builds upon the assurance case pattern by specifying details pertinent to the ACAS Xu system, organizing goals, strategies, contexts, assumptions, and justifications accordingly while marking yet undeveloped parts explicitly. It illustrates a structured and meticulous approach to validating security requirements across various stages of ACAS Xu's lifecycle, focusing particularly on asset protection and the identification and mitigation of security threats, crucial for ensuring overall system security and reliability.