To instantiate the safety case pattern provided for a GPCA (Generic Patient Controlled Analgesia) system and create the corresponding assurance case in a hierarchical tree format, I will replace the placeholders with specific information relevant to the GPCA system. I will remove the additional decorators as their role in a created assurance case is completed once instantiation is done.

\*\*Assurance Case for GPCA System Safety\*\*

- \*\*G1: Operational safety is verified in GPCA system\*\*

- C1: All specs are given by GPCA system requirements

- \*\*S1: Argument over the satisfaction of all specs over GPCA system\*\* (undeveloped)

- \*\*G2: All operational hazards are mitigated\*\*

- C2: Operational hazards are given by GPCA hazard analysis

- \*\*S3: Argument over operational hazards\*\*

- \*\*G3: Operational hazard A is mitigated\*\*

- C3: All related scenarios are given by hazard A scenarios

- \*\*S4: Argument over the applied scenarios of operational hazard A\*\*

- \*\*G4: Operational hazard A is mitigated under scenario X\*\*

- C4: All related specs are given by scenario X requirements

- \*\*S5: Argument over all specs related to scenario X\*\*

- \*\*G5: Spec B is appropriate for scenario X\*\*

- C5: Properties are given by spec B properties

- \*\*S6: Argument the appropriateness of Spec B over properties\*\*

- \*\*G6: Property P is appropriate for Spec B\*\*

- C6: Source is given by property P source

- \*\*S7: Argument over the source of the Property P definition\*\*

- \*\*G7: Source Document D is appropriate and trustworthy\*\*

- Sn1: Source verification document

- \*\*G8: Property P definition is sufficient\*\*

- Sn2: Definition documentation

- \*\*S2: Argument over reliability in all suitable levels of GPCA system\*\* (undeveloped)

This tree structure above represents the instantiation of the safety case pattern for the GPCA system. Each goal and strategy at different levels corresponds to specific components, scenarios, and aspects analyzed to ensure operational safety. Multiple instances or modifications can be made based on further scenario expansions. This structure supports detailed analysis via strategies and context, ensuring the comprehensive safety of the GPCA system across various operational conditions and requirements.