Here is the instantiation of the given safety case pattern for the Generic Patient-Controlled Analgesia (GPCA) system using the domain information provided:

\*\*Assurance Case: 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 \*\*

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

- \*\*G3.1: Overinfusion is mitigated\*\*

- \*\*S4: Argument over the applied scenarios of Overinfusion\*\*

- \*\*G4.1: Overinfusion when dose limit exceeded due to excessive bolus requests is mitigated\*\*

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

- \*\*G5: Flow rate sensor is equipped for dose limit scenario\*\*

- \*\*S6: Argument the appropriateness of flow rate sensor over properties\*\*

- \*\*G6: Flow rate less than 90% of the programmed rate setting is appropriate for flow rate sensor\*\*

- \*\*S7: Argument over the source of the property definition\*\*

- \*\*G7: FDA standard is appropriate and trustworthy for defining properties\*\*

- \*\*Sn1: FDA standard reference\*\*

- \*\*G8: Flow rate property definition is sufficient\*\*

- \*\*Sn2: Expertise opinion documentation\*\*

- \*\*G3.2: Underinfusion is mitigated\*\*

- \*\*S4: Argument over the applied scenarios of Underinfusion\*\*

- \*\*G4.2: Underinfusion when programmed rate too low is mitigated\*\*

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

- \*\*G5: Period to trigger the underinfusion alarm is set at 15 minutes appropriate for low rate scenario\*\*

- \*\*S6: Argument the appropriateness of period property for the spec\*\*

- \*\*G6: Period property is appropriate for triggering underinfusion alarm\*\*

- \*\*S7: Argument over the source of the property definition\*\*

- \*\*G7: Expert opinion is appropriate and trustworthy for period property definition\*\*

- \*\*Sn1: Expert testimony\*\*

- \*\*G8: Period property definition is sufficient\*\*

- \*\*Sn2: Previous projects data\*\*

- \*\*IncontextOf\*\*

- S1 associated with C1

- S3 associated with C2 (GPCA operational hazards)

- S4 associated with C3 (Scenarios related to Overinfusion and Underinfusion)

- S5 associated with C4 (Specs related to dose limit and low rate scenarios)

- S6 associated with C5 (Properties related to specs)

- S7 associated with C6 (Sources for property definitions)

This instantiation includes Goals, Strategies, Contexts, Justifications, and Solutions aligned hierarchically, fulfilling the requirements and addressing hazards for the Generic Patient-Controlled Analgesia system safety case. Lay out in this fashion makes the relationship among elements and the structure of the safety case clear.