Based on the given pattern, instantiated placeholders with system-specific information regarding the Generic Patient-Controlled Analgesia (GPCA) system, and the relationships and hierarchies denoted by the predicates, we can create the instantiated safety case. Here is the hierarchical representation in a tree format:

```

- G1: Operational safety is verified in GPCA system

- C1: All specifications are given by spec.allInstances()

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

- G2: All operational hazards are mitigated

- C2: Operational hazards are given by operational hazard.allInstances()

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

- S3: Argument over operational hazards

- G3: Overinfusion is mitigated

- C3: All related scenarios are given by Overinfusion

- S4: Argument over the applied scenarios of Overinfusion

- G4: Overinfusion is mitigated under scenario1

- C4: All related specs are given by scenario1.spec.allInstances()

- S5: Argument over all specs related to scenario1

- G5: Specification SR1.1 is appropriate for scenario1

- C5: Properties are given by spec.property.allInstances()

- S6: Argument the appropriateness of spec over properties

- G6: Flow rate sensor property is appropriate for SR1.1

- C6: Source is given by property.source

- S7: Argument over the source of the property definition

- G7: FDA standard is appropriate and trustworthy

- Sn1: Source: FDA standard

- G8: Flow rate sensor property definition is sufficient

- Sn2: Source: Expertise opinion

- G4: Overinfusion is mitigated under scenario2

- C4: All related specs are given by scenario2.spec.allInstances()

- S5: Argument over all specs related to scenario2

- G5: Specification SR1.2 is appropriate for scenario2

- C5: Properties are given by spec.property.allInstances()

- S6: Argument the appropriateness of spec over properties

- G6: Period property to trigger the underinfusion alarm is appropriate for SR1.2

- C6: Source is given by property.source

- S7: Argument over the source of the property definition

- G7: Expertise opinion is appropriate and trustworthy

- Sn1: Source: Expertise opinion

- G8: Period property definition is sufficient

- Sn2: Source: Previous knowledge

- S4: Argument over the applied scenarios of Overinfusion

- G4: Overinfusion is mitigated under scenario3

- C4: All related specs are given by scenario3.spec.allInstances()

- S5: Argument over all specs related to scenario3

- G5: Specification SR6.1.3 is appropriate for scenario3

- C5: Properties are given by spec.property.allInstances()

- S6: Argument the appropriateness of spec over properties

- G6: Flow rate < 90% property is appropriate for SR6.1.3

- C6: Source is given by property.source

- S7: Argument over the source of the property definition

- G7: Previous knowledge is appropriate and trustworthy

- Sn1: Source: Previous knowledge

- G8: Flow rate < 90% property definition is sufficient

- Sn2: Source: FDA standard

- G3: Underinfusion is mitigated

- Same structure as Overinfusion but for Underinfusion and its corresponding scenarios/specifications

```

In the tree format:

- Goals (G) are represented by their IDs and descriptions.

- Contexts (C) and Strategies (S) are listed with their IDs.

- Solutions (Sn) are listed under their respective goals.

Placeholders `{}` have been replaced with specific information related to the GPCA system. Optionality is respected by instantiating the appropriate elements under each operational hazard and scenario. Undeveloped portions of the case are noted but left as future work.