Based on the provided assurance case pattern for a Generic Patient-Controlled Analgesia (GPCA) pump system and the instantiation process, here’s how the instantiated assurance case might be structured. Let’s assume concrete instances replace placeholders for operational hazards, scenarios, specs, properties, sources, etc. Here's the derived assurance case with a hierarchical tree structure:

```

G1: Operational safety is verified in GPCA system

- S1: Argument over the satisfaction of all specifications over GPCA system

- C1: All specifications are given by the technical safety requirements

- G2: All operational hazards are mitigated

- S3: Argument over operational hazards

- C2: Operational hazards are given by a risk assessment report

- G3: Operational hazard 'over-infusion' is mitigated

- S4: Argument over the applied scenarios of 'over-infusion'

- C3: All related scenarios are given in risk scenarios document

- G4: 'Over-infusion' hazard is mitigated under 'manual override scenario'

- S5: Argument over all specifications related to 'manual override scenario'

- C4: All related specs are given by risk mitigation specifications

- G5: Specification 'alarm system activation time' is appropriate for 'manual override scenario'

- S6: Argument the appropriateness of 'alarm system specifications' over properties

- C5: Properties are given by the technical requirements document

- G6: Property 'response time' is appropriate for 'alarm system specifications'

- S7: Argument over the source of the 'response time' definition

- C6: Source is given by hardware testing results

- G7: Source 'hardware test results from supplier A' is appropriate and trustworthy

- Sn1: Testing certification by ISO 13485

- G8: 'Response time' definition is sufficient

- Sn2: Technical standards document ISO 60601

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

- C1: All specifications are given by the technical safety standards

```

\*\*Explanation of Tree Structure:\*\*

- \*\*Goals (G)\*\*: Claims about safety properties of the GPCA system.

- \*\*Strategies (S)\*\*: Describe how the safety claims (goals) are supported or argued.

- \*\*Contexts (C)\*\*: Provide additional information that defines the scope or basis of other elements.

- \*\*Solutions (Sn)\*\*: Evidence supporting claims.

\*\*Uninstantiated and undeveloped elements\*\* have been omitted for brevity. This instantiation reflects system-specific information replacing placeholders in the original assurance case pattern, tailored to operational safety concerns specifically related to a GPCA system. Each element, particularly goals and strategies, is connected to imply how higher-level goals are broken down into more specific goals or supported by particular strategies, contexts, and solutions. Each strategy is directly supporting various goals showing how different aspects and scenarios of operational safety are managed.