Based on the domain information and safety case pattern given for the GPCA system, here is the instantiated safety case represented in a hierarchical tree format:

- G1: Operational safety is verified in GPCA system

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

- undeveloped

- G2: All operational hazards are mitigated

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

- undeveloped

- S3: Argument over operational hazards

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

- G3: Overinfusion is mitigated

- S4: Argument over the applied scenarios of Overinfusion

- C3: All related scenarios are given by operational hazard

- G4: Overinfusion is mitigated under scenario 1

- S5: Argument over all specs related to scenario 1

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

- G5: spec 1.1 is appropriate for scenario 1

- S6: Argument the appropriateness of spec 1.1 over properties

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

- G6: property 1.1.1 is appropriate for spec 1.1

- S7: Argument over the source of the property 1.1.1 definition

- C6: Source is given by property.source

- G7: Source 1.1.1 is appropriate and trustworthy

- Sn1: source (e.g., FDA standard)

- G8: property 1.1.1 definition is sufficient

- Sn2: property (e.g., "Flow rate sensor is equipped")

- G5: spec 1.2 is appropriate for scenario 1

- S6: Argument the appropriateness of spec 1.2 over properties

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

- G6: property 1.2.1 is appropriate for spec 1.2

- S7: Argument over the source of the property 1.2.1 definition

- C6: Source is given by property.source

- G7: Source 1.2.1 is appropriate and trustworthy

- Sn1: source (e.g., Expertise opinion)

- G8: property 1.2.1 definition is sufficient

- Sn2: property (e.g., "Period (to trigger the underinfusion alarm) is 15 minutes.")

- G4: Overinfusion is mitigated under scenario 2

- S5: Argument over all specs related to scenario 2

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

- G5: spec 1.4 is appropriate for scenario 2

- S6: Argument the appropriateness of spec 1.4 over properties

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

- G6: property 1.4.1 is appropriate for spec 1.4

- S7: Argument over the source of the property 1.4.1 definition

- C6: Source is given by property.source

- G7: Source 1.4.1 is appropriate and trustworthy

- Sn1: source (e.g., Previous knowledge)

- G8: property 1.4.1 definition is sufficient

- Sn2: property (e.g., "Flow rate is less than 90% of the programmed rate setting.")

- G3: Underinfusion is mitigated

- S4: Argument over the applied scenarios of Underinfusion

- C3: All related scenarios are given by operational hazard

- G4: Underinfusion is mitigated under scenario 1

- S5: Argument over all specs related to scenario 1

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

- G5: spec 1.10 is appropriate for scenario 1

- S6: Argument the appropriateness of spec 1.10 over properties

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

- G6: property 1.10.1 is appropriate for spec 1.10

- S7: Argument over the source of the property 1.10.1 definition

- C6: Source is given by property.source

- G7: Source 1.10.1 is appropriate and trustworthy

- Sn1: source (e.g., FDA standard)

- G8: property 1.10.1 definition is sufficient

- Sn2: property (e.g., "Dose limit exceeded due to excessive bolus requests.")

- G4: Underinfusion is mitigated under scenario 2

- S5: Argument over all specs related to scenario 2

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

- G5: spec 3.4.6 is appropriate for scenario 2

- S6: Argument the appropriateness of spec 3.4.6 over properties

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

- G6: property 3.4.6.1 is appropriate for spec 3.4.6

- S7: Argument over the source of the property 3.4.6.1 definition

- C6: Source is given by property.source

- G7: Source 3.4.6.1 is appropriate and trustworthy

- Sn1: source (e.g., Expertise opinion)

- G8: property 3.4.6.1 definition is sufficient

- Sn2: property (e.g., "Bolus volume/concentration too high.")

This hierarchical tree structure represents the instantiated safety case for the GPCA system, detailing how each operational hazard is mitigated under different scenarios with relevant specs, properties, and sources meticulously documented in the assurance case format.