Below is the instantiated safety case for the GPCA system, which utilizes the given safety case pattern and domain information. The hierarchical tree format uses dashes (-) to denote different levels.

- G1: Operational safety is verified in GPCA system.

- C1: All specs are given by GPCA system.spec.allInstances()

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

- G2: All operational hazards are mitigated

- 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 Overinfusion

- G4: Overinfusion is mitigated under scenario 1

- S5: Argument over all specs related to scenario 1

- C4: All related specs are given by scenario 1.spec.allInstances()

- G5: Spec SR1.1 is appropriate for scenario 1

- S6: Argument the appropriateness of SR1.1 over properties

- C5: Properties are given by SR1.1.property.allInstances()

- G6: Flow rate sensor is equipped

- S7: Argument over the source of the Flow rate sensor definition

- C6: Source is given by Flow rate sensor.source

- G7: FDA standard is appropriate and trustworthy

- Sn1: FDA standard

- G8: Flow rate sensor definition is sufficient

- Sn2: Flow rate sensor property

- G4: Overinfusion is mitigated under scenario 2

- S5: Argument over all specs related to scenario 2

- C4: All related specs are given by scenario 2.spec.allInstances()

- G5: Spec SR1.2 is appropriate for scenario 2

- S6: Argument the appropriateness of SR1.2 over properties

- C5: Properties are given by SR1.2.property.allInstances()

- G6: Period (to trigger the underinfusion alarm) is 15 minutes

- S7: Argument over the source of the Period definition

- C6: Source is given by Period.source

- G7: Expertise opinion is appropriate and trustworthy

- Sn1: Expertise opinion

- G8: Period definition is sufficient

- Sn2: Period property

- G4: Overinfusion is mitigated under scenario 3

- S5: Argument over all specs related to scenario 3

- C4: All related specs are given by scenario 3.spec.allInstances()

- G5: Spec SR1.4 is appropriate for scenario 3

- S6: Argument the appropriateness of SR1.4 over properties

- C5: Properties are given by SR1.4.property.allInstances()

- G6: Flow rate is less than 90% of the programmed rate setting

- S7: Argument over the source of the Flow rate definition

- C6: Source is given by Flow rate.source

- G7: Previous knowledge is appropriate and trustworthy

- Sn1: Previous knowledge

- G8: Flow rate definition is sufficient

- Sn2: Flow rate property

- G3: Underinfusion is mitigated

- S4: Argument over the applied scenarios of Underinfusion

- C3: All related scenarios are given by Underinfusion

- G4: Underinfusion is mitigated under scenario 4

- S5: Argument over all specs related to scenario 4

- C4: All related specs are given by scenario 4.spec.allInstances()

- G5: Spec SR6.1.3 is appropriate for scenario 4

- S6: Argument the appropriateness of SR6.1.3 over properties

- C5: Properties are given by SR6.1.3.property.allInstances()

- G6: Dose limit exceeded due to excessive bolus requests

- S7: Argument over the source of the Dose limit definition

- C6: Source is given by Dose limit.source

- G7: FDA standard is appropriate and trustworthy

- Sn1: FDA standard

- G8: Dose limit definition is sufficient

- Sn2: Dose limit property

- G4: Underinfusion is mitigated under scenario 5

- S5: Argument over all specs related to scenario 5

- C4: All related specs are given by scenario 5.spec.allInstances()

- G5: Spec SR6.1.4 is appropriate for scenario 5

- S6: Argument the appropriateness of SR6.1.4 over properties

- C5: Properties are given by SR6.1.4.property.allInstances()

- G6: Bolus volume/concentration too high

- S7: Argument over the source of the Bolus volume definition

- C6: Source is given by Bolus volume.source

- G7: Expertise opinion is appropriate and trustworthy

- Sn1: Expertise opinion

- G8: Bolus volume definition is sufficient

- Sn2: Bolus volume property