ISS Regenerative Environmental Control and Life Support System

Katie Burlingame
ISS ETHOS Flight Controller
Cimarron

Turning Yesterday's Coffee into Tomorrow's Coffee

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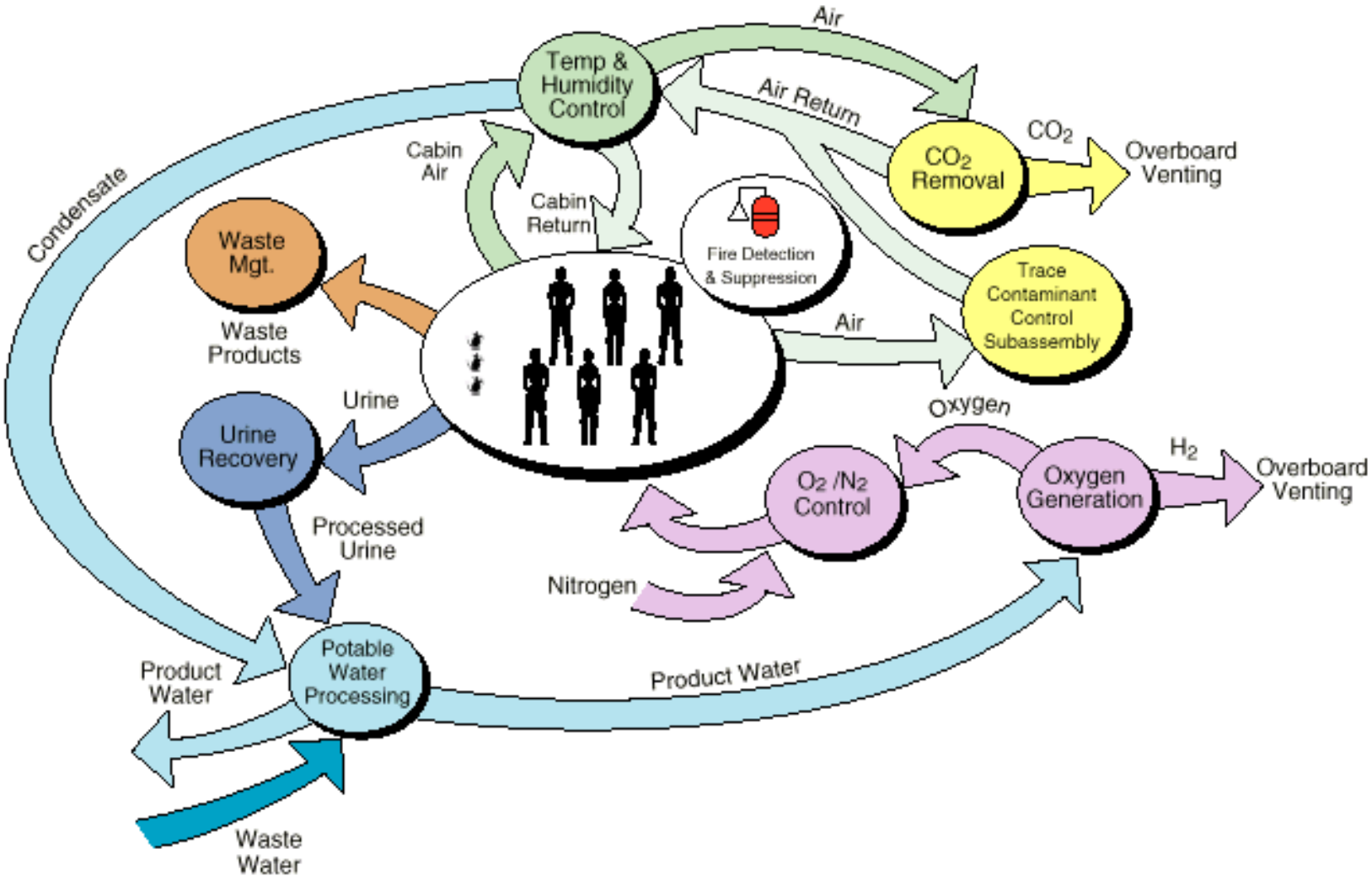
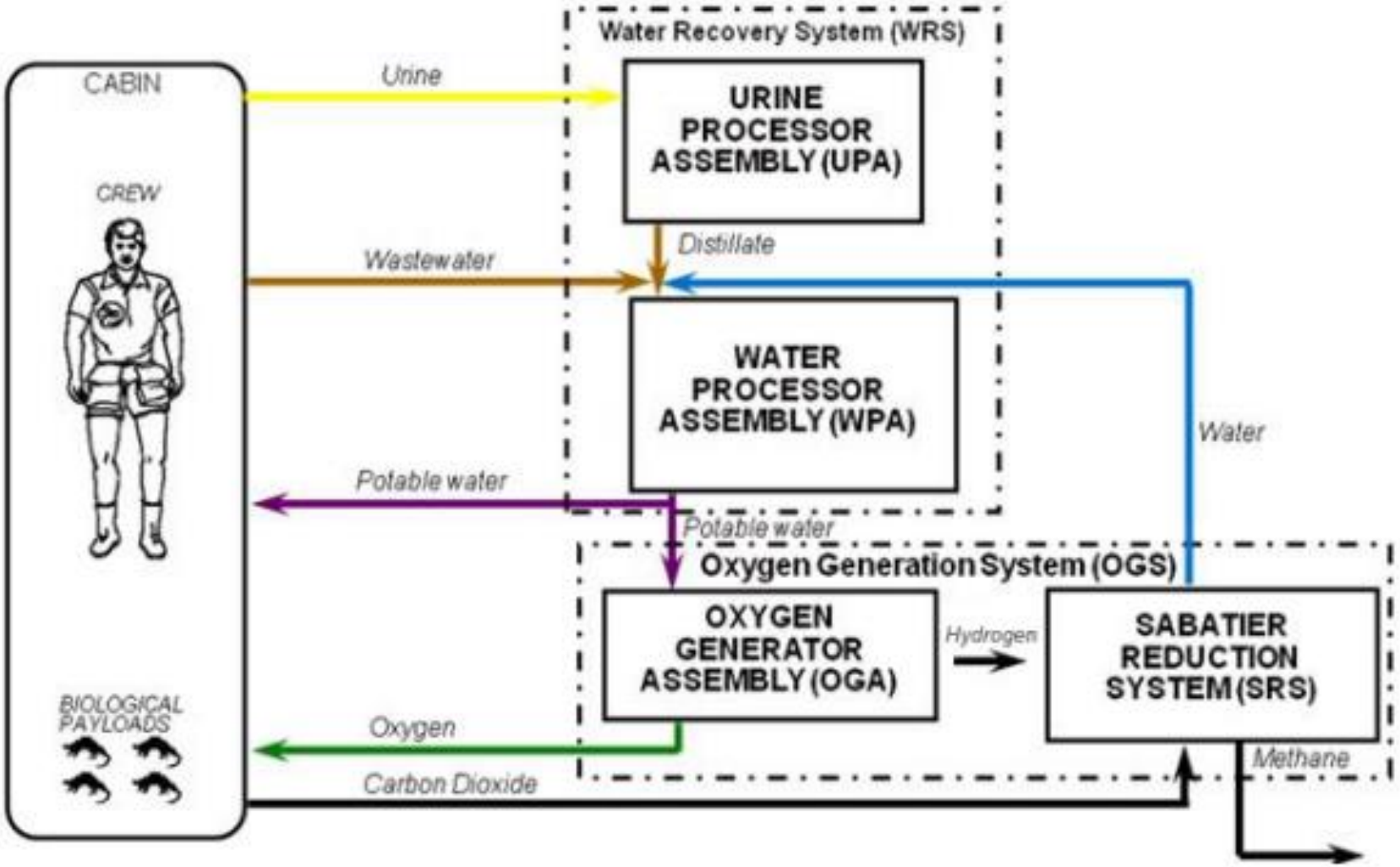
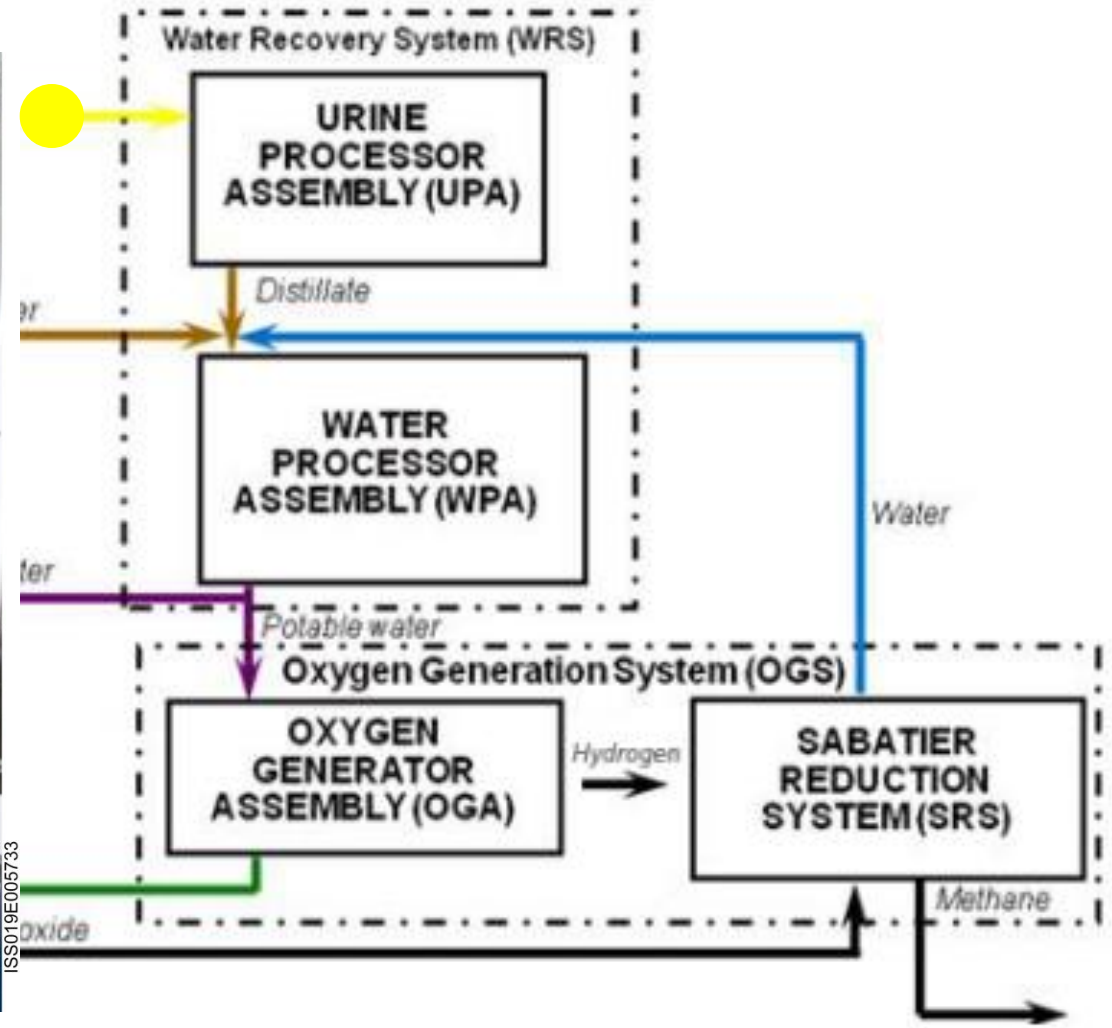
Mission Control Center
esa
JAXA
FLIGHT DIRECTOR
EVA
BME
SURGEON
POSN 4290
POSN 4287


Air
Temp & Humidity Control
Air Return
CO_2
CO_2 Removal
Overboard Venting
Cabin Air
Cabin Return
Condensate
Waste Mgt.
Waste Products
Fire Detection & Suppression
Trace Contaminant Control Subassembly
Air
Urine
Urine Recovery
Oxygen
H_2
O_2 /N_2 Control
Oxygen Generation
Overboard Venting
Processed Urine
Nitrogen
Potable Water Processing
Product Water
Product Water
Waste Water


OVHD
EXIT
NOD 1


Water Recovery System (WRS)
CABIN
CREW
BIOLOGICAL PAYLOADS
Urine
URINE PROCESSOR ASSEMBLY (UPA)
Distillate
Wastewater
WATER PROCESSOR ASSEMBLY (WPA)
Water
Potable water
Potable water
Oxygen Generation System (OGS)
OXYGEN GENERATOR ASSEMBLY (OGA)
Hydrogen
SABATIER REDUCTION SYSTEM (SRS)
Oxygen
Methane
Carbon Dioxide


LAB1P2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Distillate
WATER PROCESSOR ASSEMBLY (WPA)
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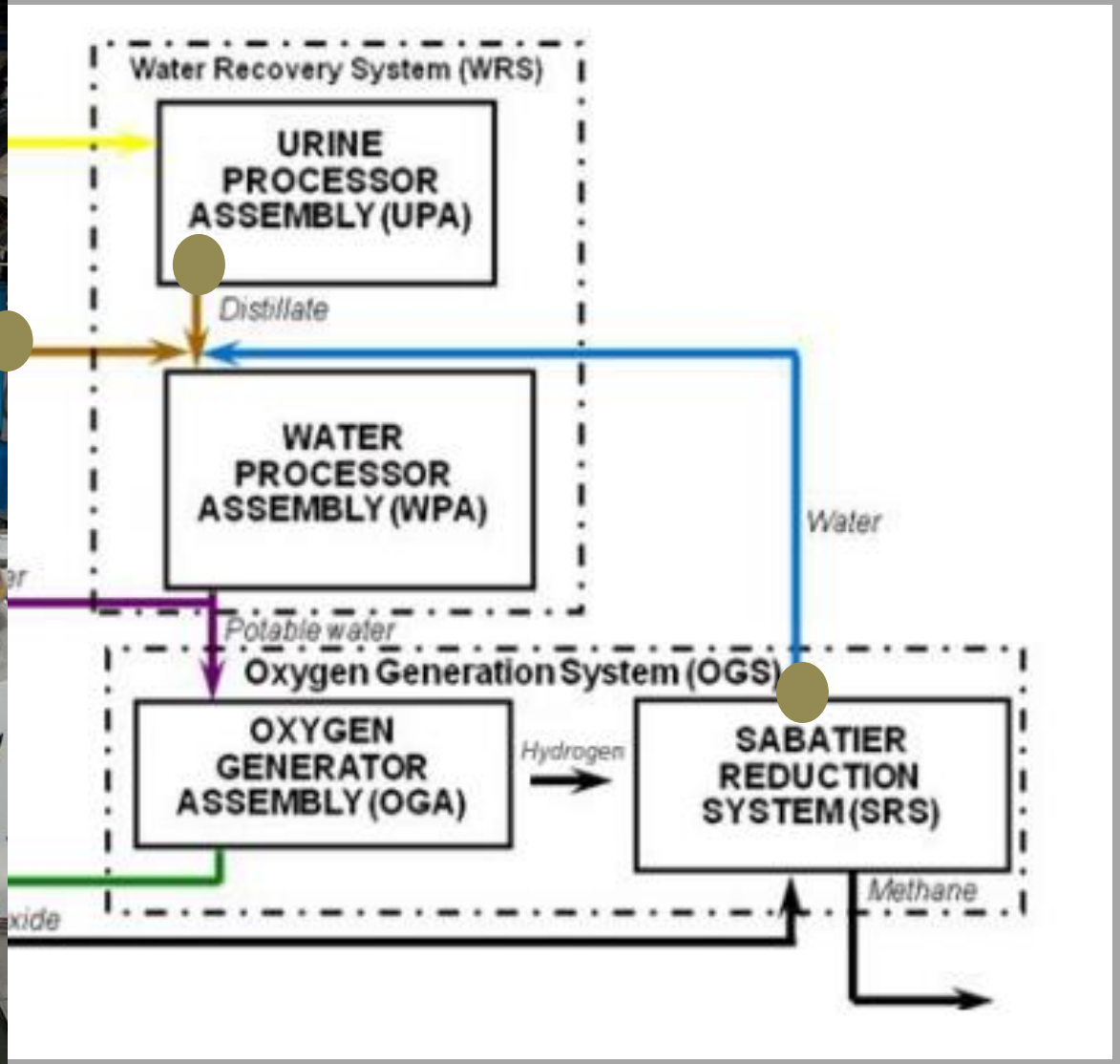
Oxygen Generation System (OGS)
OXYGEN GENERATOR ASSEMBLY (OGA)
Hydrogen
SABATIER REDUCTION SYSTEM (SRS)
Methane
ISS019E005733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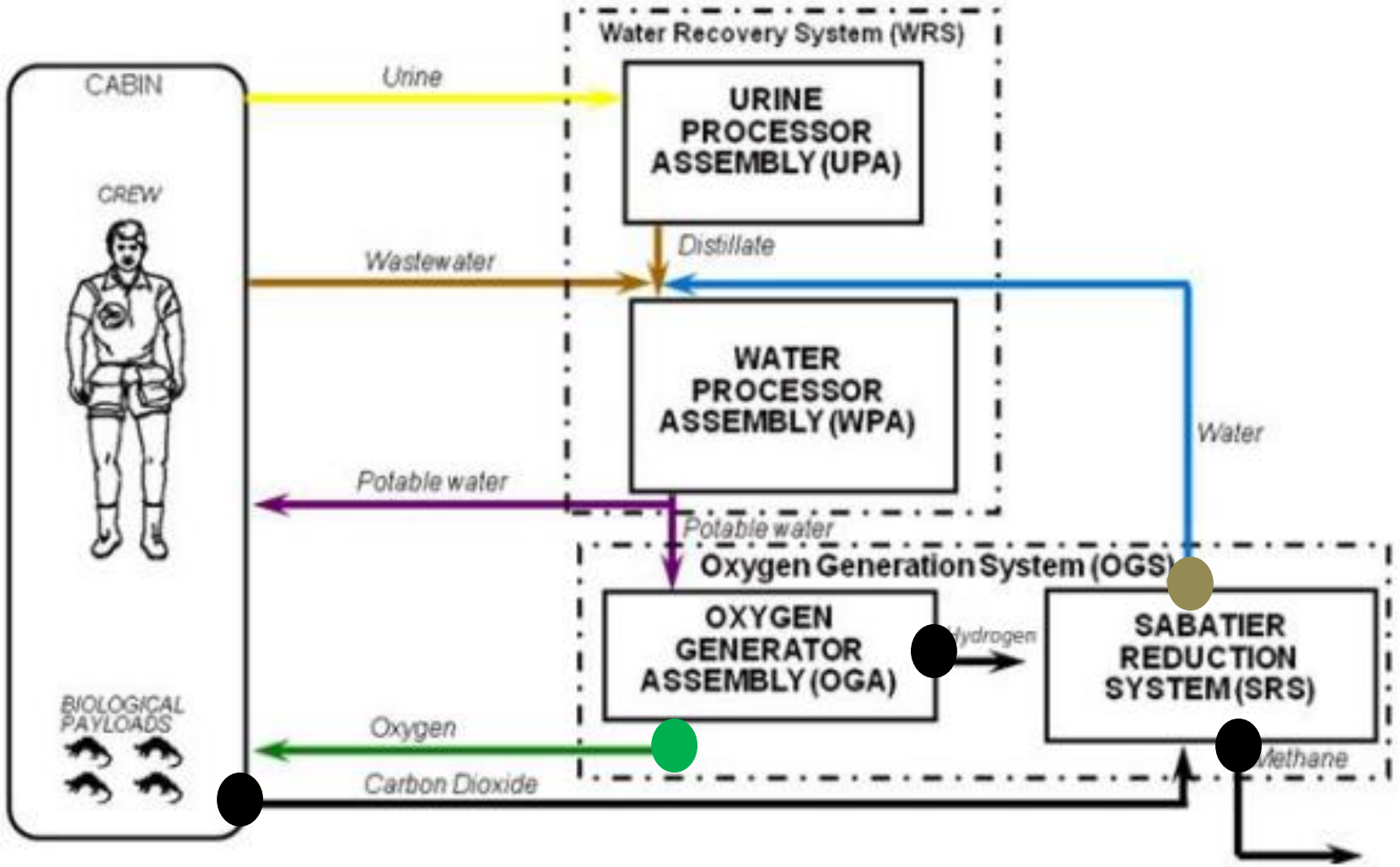
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Methane
Carbon Dioxide

Why Regen ECLSS?

- Money
- Space
- Testbed

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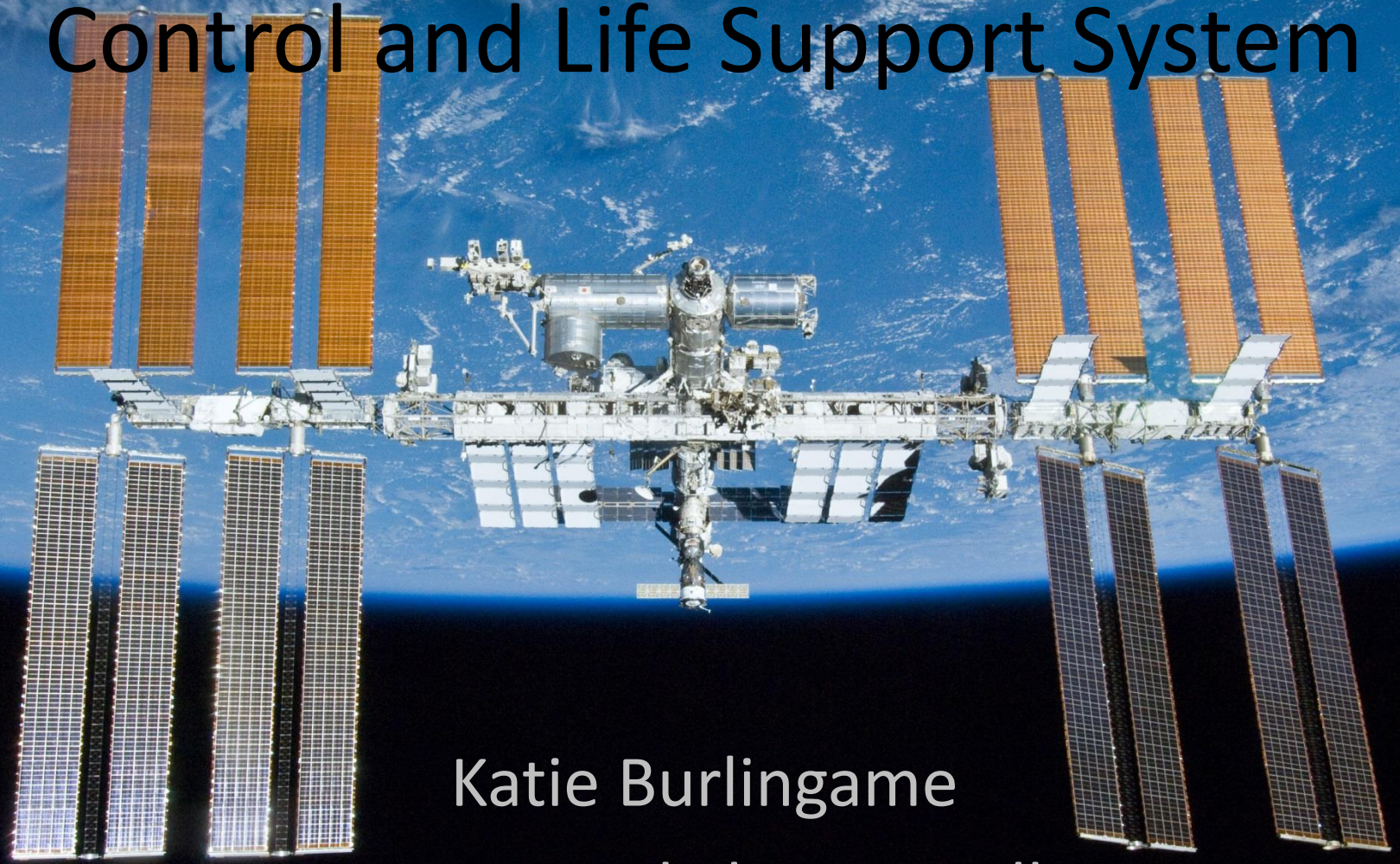

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ISS Regenerative Environmental Control and Life Support System

The International Space Station (ISS) is a manned laboratory operating in orbit around the Earth that was built and is currently operated by several countries across the world. The ISS is a platform for novel scientific research as well as a testbed for technologies that will be required for the next step in space exploration. In order for astronauts to live on ISS for an extended period of time, it is vital that on board systems consistently provide clean air and water. Currently, ISS uses a regenerative environmental control and life support system to recycle human waste products such as urine, sweat, and carbon dioxide into clean water and oxygen. This process significantly reduces the cost and mass required to maintain a crewed presence onboard and provides experience with the types of systems that will be needed in future exploration missions.

Katie earned a B.S. in Mechanical Engineering and a M.S. in Biomedical Engineering from Washington University in St. Louis. She currently works for Cimarron, Inc. in the Flight Operations Directorate at NASA Johnson Space Center (JSC). As an ISS ETHOS flight controller, Katie is responsible for operating the environmental control and life support systems and the internal thermal control systems on ISS, as well as leading the team through any emergencies that may occur.