

PNNL Robotics

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Program Manager

RBX Activities at Hanford

- Three Focus Area-Centered programs:
 - Mixed Waste
 - D&D
 - Tanks

MW RBX Activities

- HANDSS-55 Waste Repackaging System
 - Team with INEEL, SRTC, SR SWD
 - Provided end-effectors for the sorting station
 - Universal gripper
 - manual sort bin
 - Determine requirements for moving HANDSS-55 to a mobile platform and to process RH waste

MW RBX Activities

- Size Reduction of RH TRU Long Length Waste
 - Support to M91 TRU Waste Project
 - Team with NETL, FH, T-plant operations
 - Size reduce PUREX towers



NON-T

NON-T

300



10-R

1

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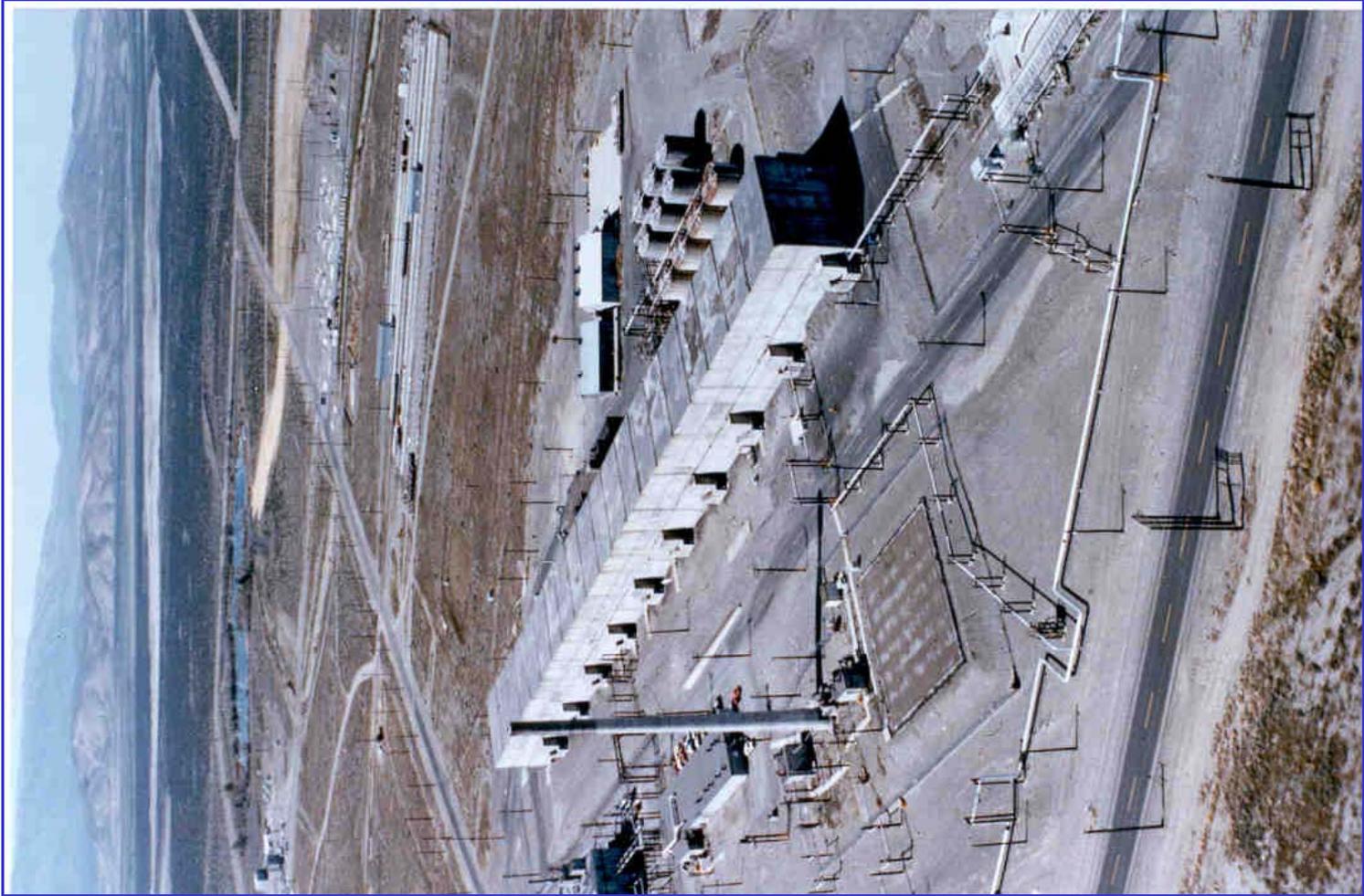
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EXIT

D&D RBX Activities

- Remote systems support to the Canyon Disposition Initiative (CDI)
 - Team with Bechtel
 - Collect CERCLA Record of Decision (ROD) data for determining the final disposition of the canyon facilities.
 - U-Plant is the pilot facility



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Crosscut Program



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D&D RBX Activities

- FY 1998: Characterization of the U-Plant Railroad Tunnel with Andros Robot
 - Used, contaminated, and abandoned robot
 - Retrieved, cleaned and reworked robot
 - Traversed 250-foot railroad tunnel, and collected video, radiation levels, and smear samples
 - Confined space, unknown radiation levels, no human access for more than 20 years.



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D&D RBX Activities

- FY 1999: Characterization of the U-Plant Ventilation Tunnel
- Initial entrance inspection and measurement verification of ventilation tunnel chimney entrance.
- Hot deployment of commercially available equipment



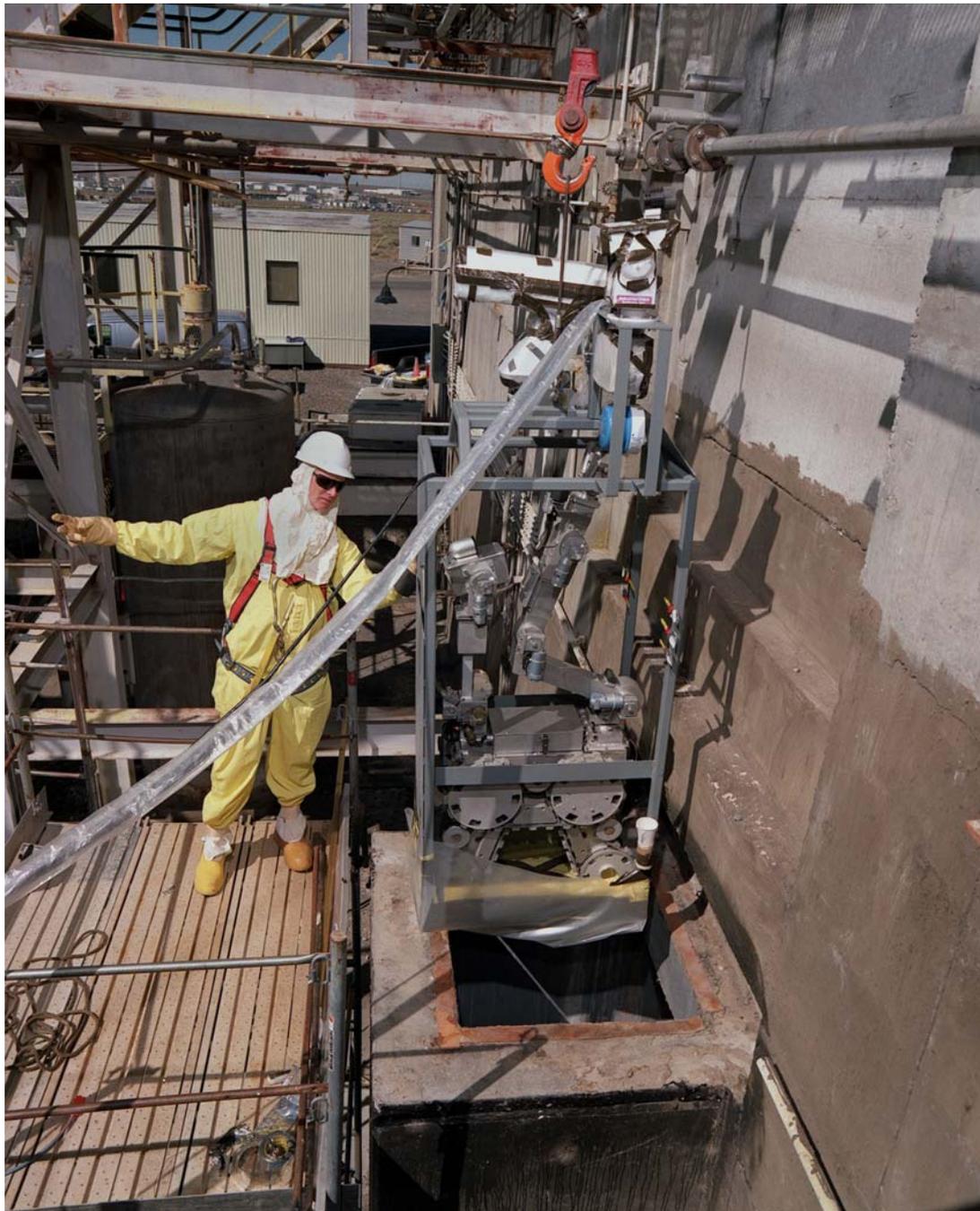
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D&D RBX Activities

- FY 1999: Characterization of the U-Plant Ventilation Tunnel with Andros Robot
 - collected video, radiation, and smear samples
 - 750-foot tunnel
 - 3 x 3 foot entrance
 - no human entry since mid 1940s
 - unknown radiation levels
 - pushed technology 50% beyond current state



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D&D RBX Activities

- FY 2000: Characterization of U-Plant Drain Line
 - 24-inch drain running underneath building
 - completed hot deployment of OVS camera system to visually inspect entrance, 37 feet down inside cell
 - used equipment abandoned from another project.



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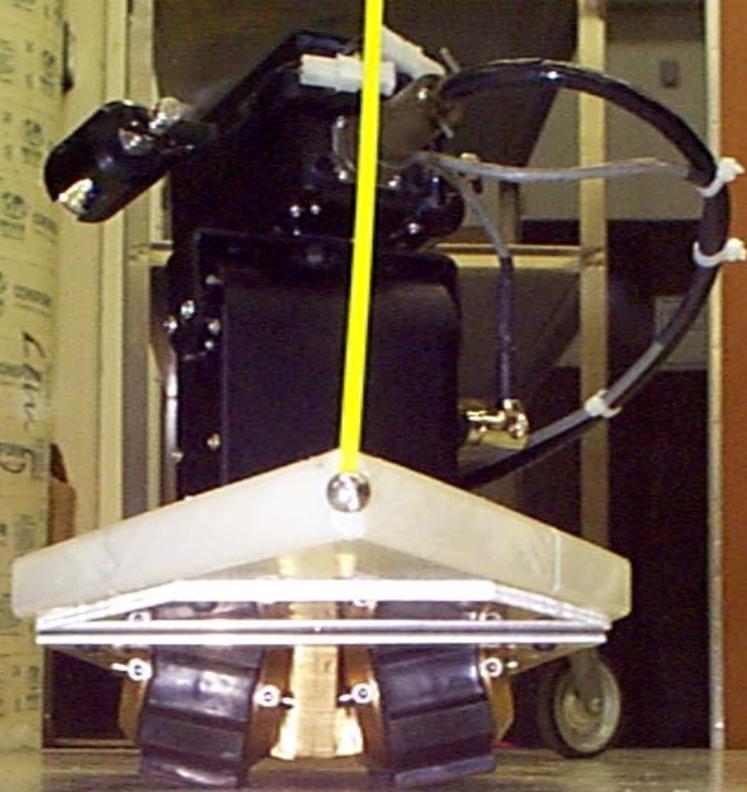
D&D RBX Activities

- FY 2000: Characterization of U-Plant Drain Line
 - Custom-designed crawler deployed into drain line for collection of characterization data
 - 800-foot tunnel, 10 obstructions, lots of debris



PNT Robotics

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408 FT
23AUG00

2183 NREM
14:42:49

29 NREM/H

148 FT
23AUG88

1813 HREN
19:53:03

191 HREN/H



239 77

23AUC99

2149 HRZH

14 : 93 : 23

31 HRZH

Tanks RBX Activities

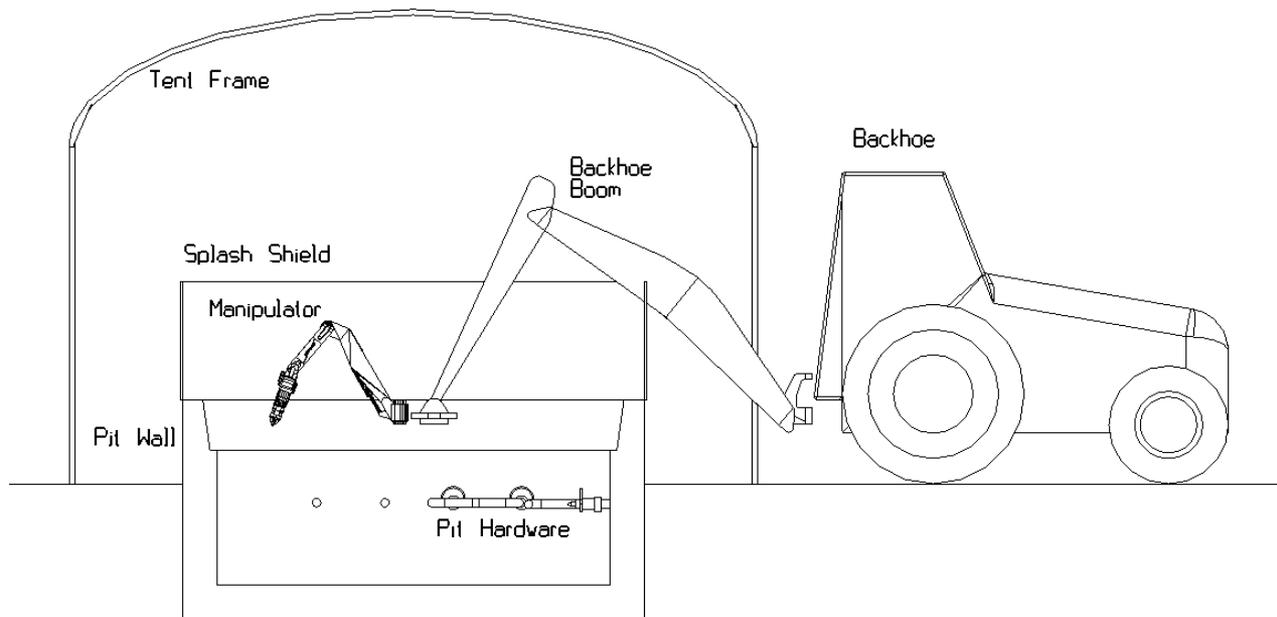
- Pit Viper Project
 - Team with CH2MHill, Numatec
 - Deploy remote system platform for improving operations in Hanford valve and equipment pits
 - FY 1999: Technology assessment, concept development, and selection of preferred solution.

Tanks RBX Activities

- FY 2000: Signed MOA between Project W-314, TFA, and RBX for the specification, procurement, testing, and installation of the remote system in the AW tank farm pits
- Formalize requirements, develop procurement specification
- Awarded contracts for backhoe and manipulator
- Identified cold test facility

FY 2001 Tanks

- Receive, assemble, integrated, and test Pit Viper hardware
- Turn over to Project W-314



Equipment Inventory

- Collection of used equipment for field deployments
- Some contaminated, though very useful in contaminated facilities
- Web site under construction

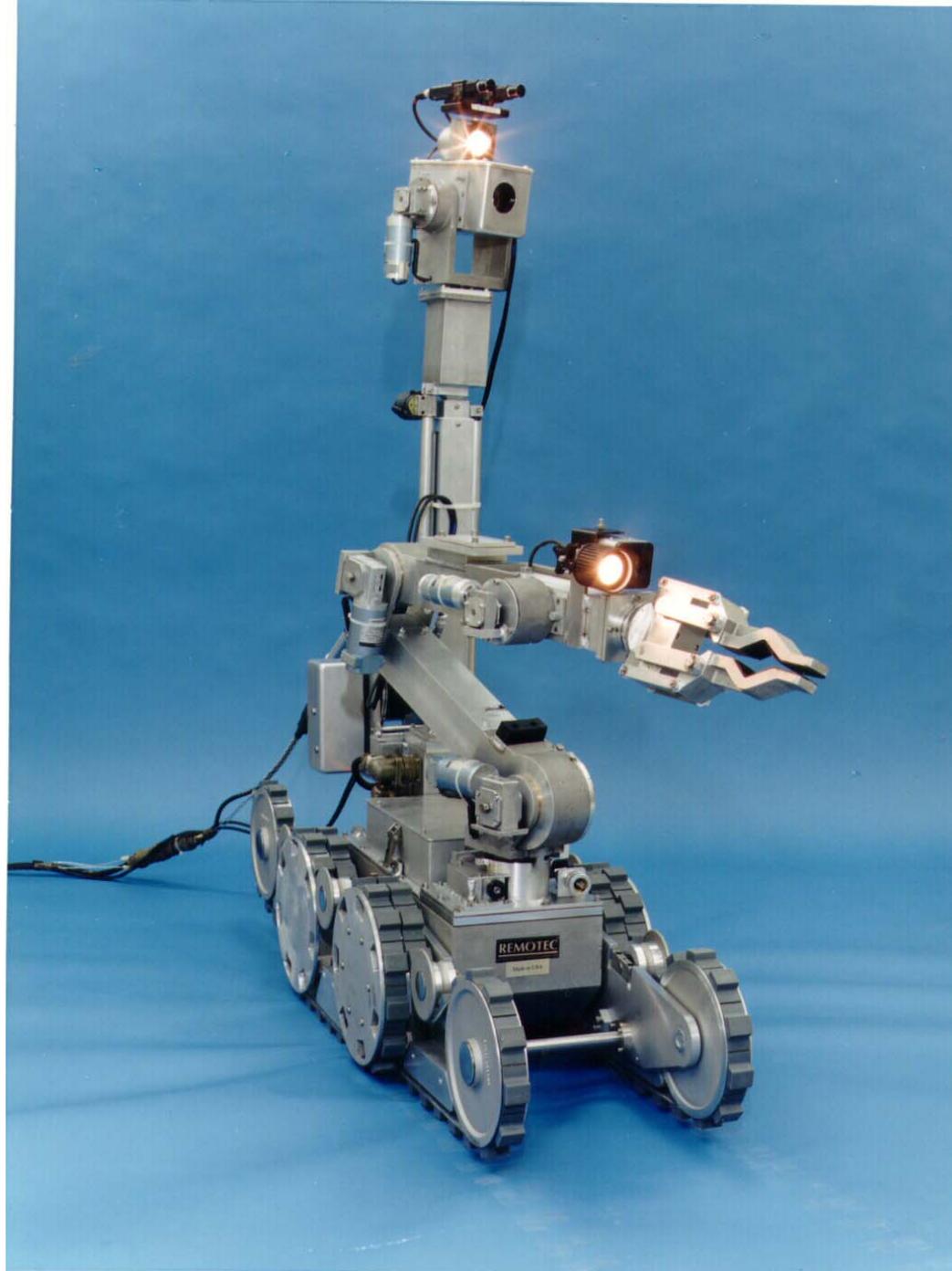




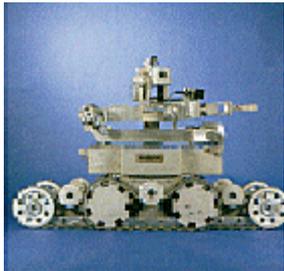
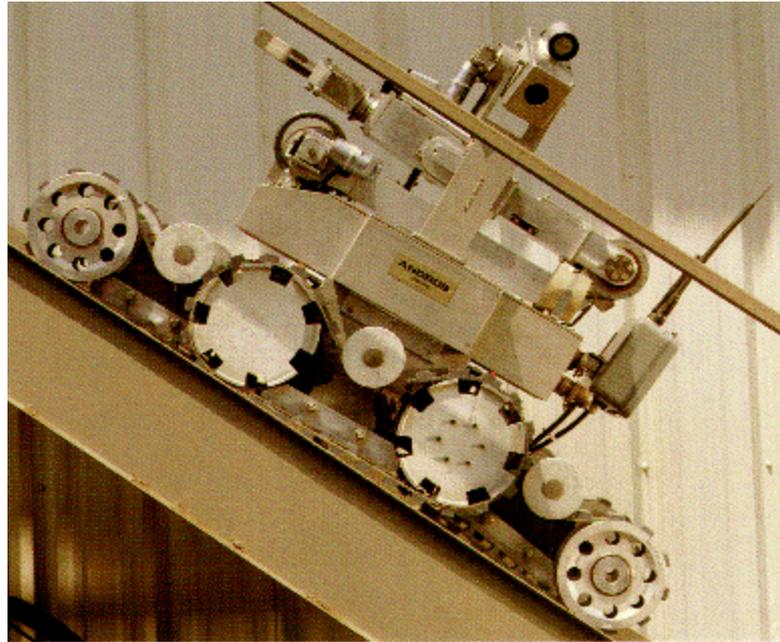
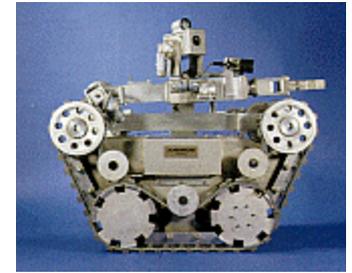
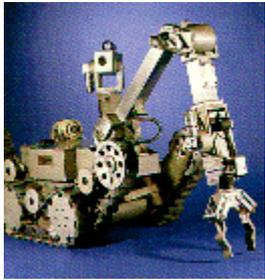
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Final Words

- Real work for real users with real problems
- Adaptation of commercially available equipment
- Hardware design and development
- Field deployments in hot environments