

# Compact, Lightweight, Transportable Nuclear Reactor Systems for use at Remote Locations

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## A Nuclear Reactor System for use at Remote Locations

### Small Modular Reactor

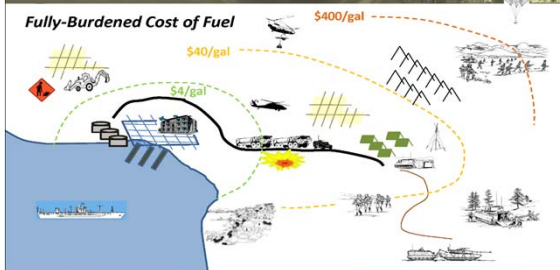
- MOTIVATION for **very** small reactors
  - National Security Missions
  - Off-grid Power
  - Process Heat
  - Other Applications
- DESIGN
- Generation of Water and Vehicle Fuel
- CONCLUSION

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### Example Analysis Metric

#### Fully-Burdened Cost of Fuel



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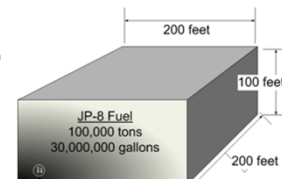
Illustrative Purposes only – numbers unique to situation  
Total cost/effort increases with distance, effort, risk

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### Theater Logistics: Nuclear vs. JP-8

Energy alternatives to produce 50 MWe for one year in theater

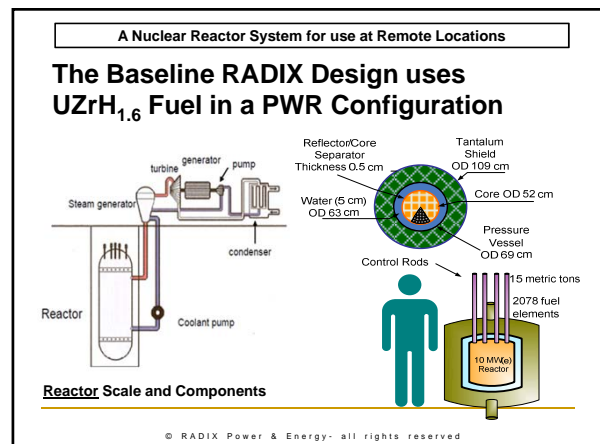
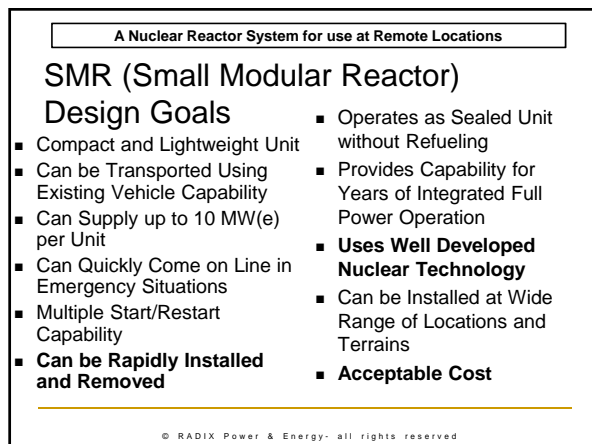
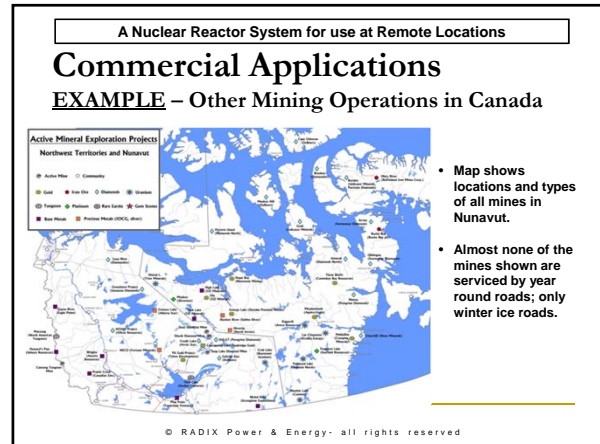
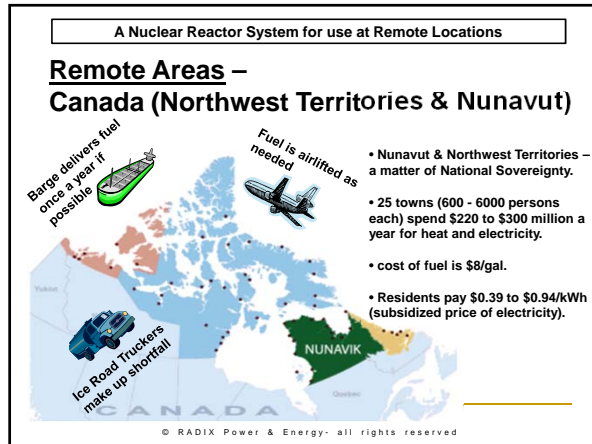


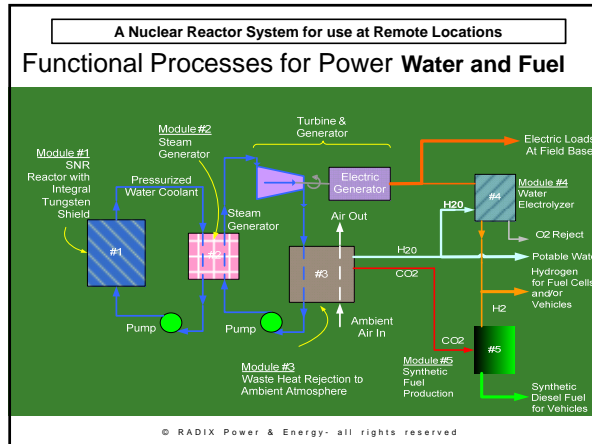
Relative size of 50 MWe Reactor

JP-8 cost in theater is up to \$100/gal

600,000 gallons per week

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### The Product Add-Ons

| Production   | 10 MW(e)                 | 50 MW(e)                   |
|--|--------------------------|----------------------------|
| JP-8 Fuel  | 3,000 gallons per day    | 15,000 gallons per day     |
| Potable Water [40° C, 23% humidity atmospheric conditions in Iraq] | 430,000 gallons per day* | 2,150,000 gallons per day* |

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### Summary

- There is a need for Safe compact deployable Modular Reactors
- 10 to 50 MWe reactors with integral radiation shield can be prebuilt and transported to and from locations where and when they are needed.
- Cost effective at \$5000 to \$8000 per kWe
- RISKS
  - Initial cost
  - Regulatory uncertainty
- Advantages
  - Social acceptance
  - Lower cost
  - Higher Safety

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