

# LAS-ANS-2014

## SMRS FOR NAVAL PROPULSION

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### TOPICS

#### A) DESIGN: small & modular & mobile

- (Defence) Economics/Environment or (Economics) Defence/Environment
- $\int \int [\text{Shock} * \text{vibration} * \text{3D motion}] ds dt$
- $\prod [(\text{Naval safety}) \cup (\text{Nuclear safety})]$

#### B) LICENSING + SAFEGUARDS: rules + procedures

#### C) OPERATION: digital technology + maintenance

#### D) HUMAN FACTORS: qualification + retention

# USS NARWHAL + USS ENTERPRISE



**NATURAL CIRCULATION  
(quietness) – 5.000 ton**

**8 PWRS REACTORS –  
LOOP TYPE – 4 shaft lines  
95.000 ton**



# MNF SNA RUBIS



**NUCLEAR – TURBO –  
ELECTRIC DRIVE**

**INTEGRATED PWR  
REACTOR – 48 MWt  
2.600 ton**

# Russian Nuclear Icebreakers



- Very low temperatures
- Hard access paths
- Intense shock loads



# MB – PNM - LABGENE

