

A Report on IEEE Standard Development for Shipboard IPS System Design

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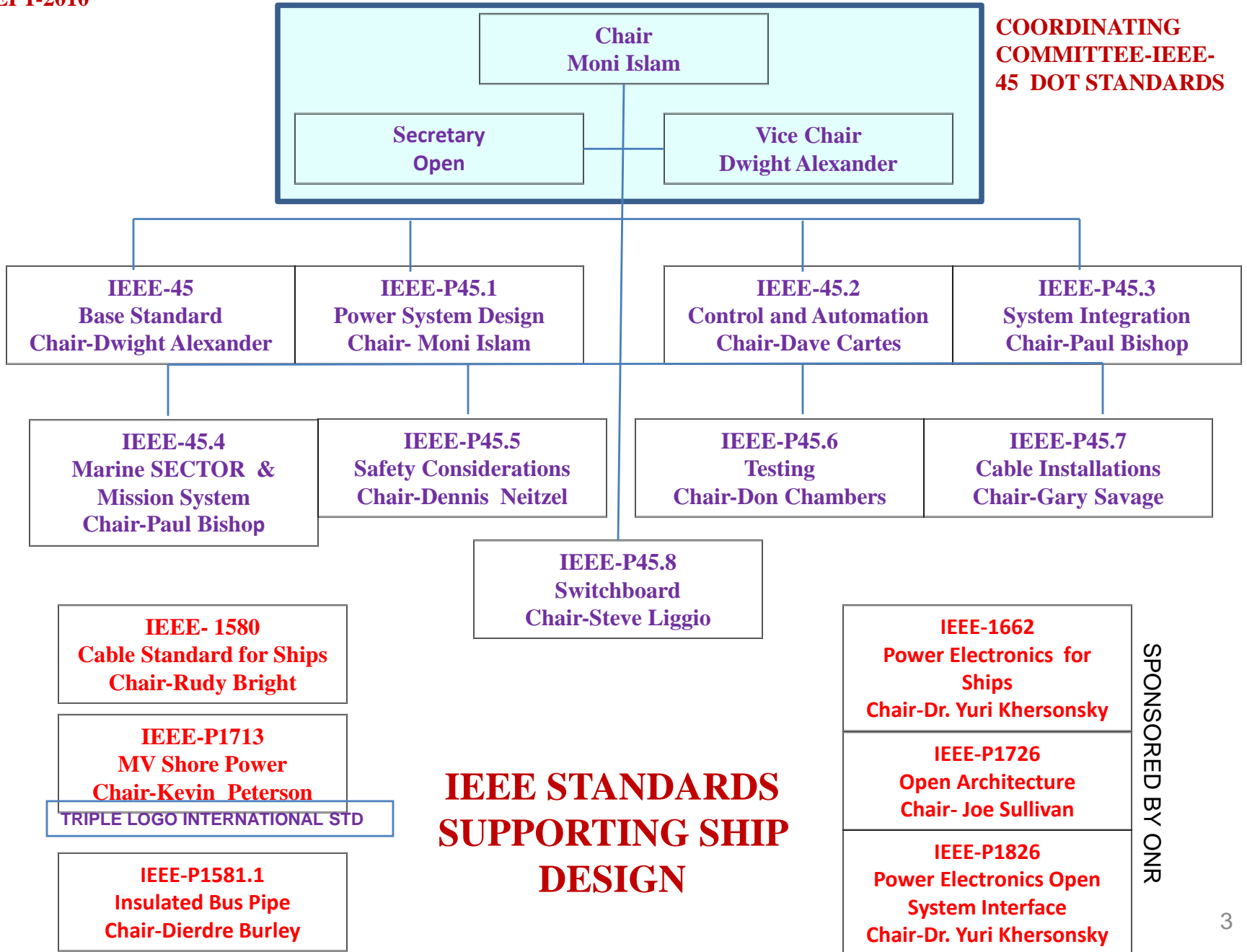
Chair-Coordinating Committee for IEEE-45

What is IEEE-45 :

**RECOMMENDED PRACTICE FOR ELECTRICAL
INSTALLATION ON SHIPBOARD**

**THIS IS THE MOST PROGRESSIVE STANDARD FOR
COMMERCIAL SHIP DESIGN PARTICULARLY THE
ELECTRIC SHIP DESIGN-INTEGRATED POWER SYSTEM**

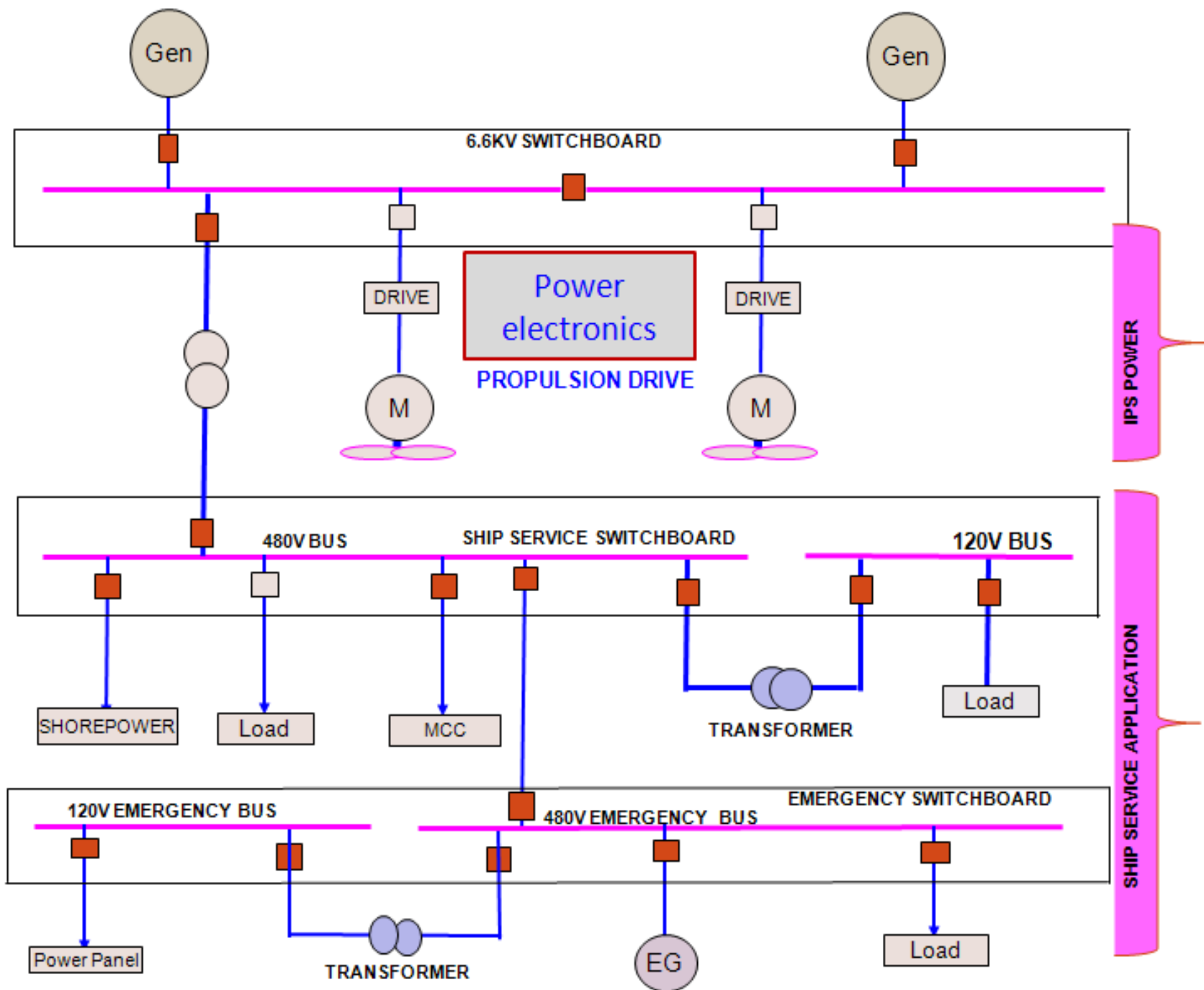
**THE STANDARD IS BEING UPDATED AND NEW SUPPORTING
DOT STANDARDS ARE BEING DEVELOPED TO SUPPORT
COMMERCIAL AND MILITARY SHIP DESIGN**



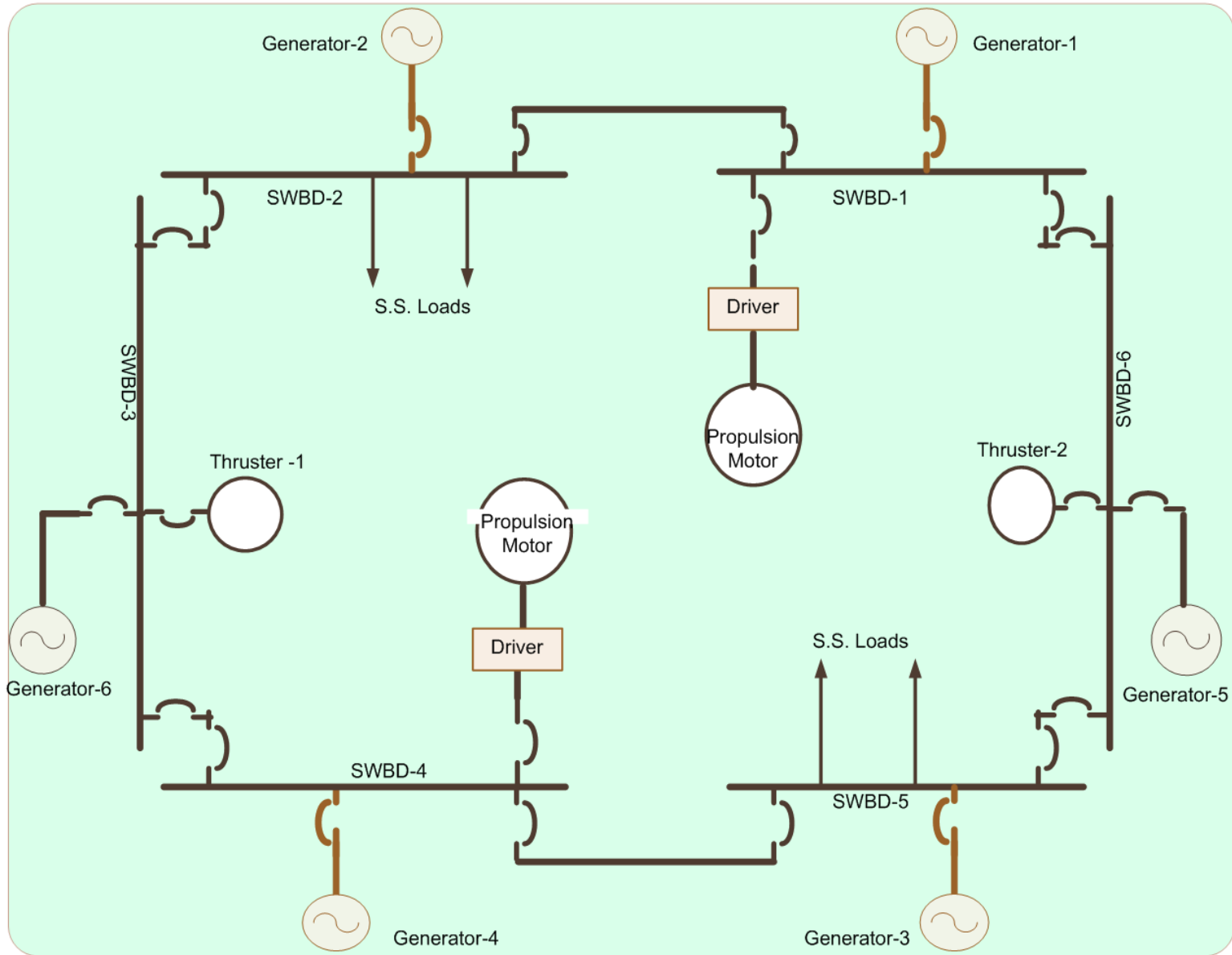
AEPS/IPS Design Topics

2002-VERSION

- 1) Prime Mover/Generator
 - Power Generator level
 - Voltage levels
 - Thermal management
 - Weight management
- 2) Switchboard
 - a) Main SWBD
 - b) Dist. SWBD
 - c) Propulsion SWBD
 - Fault Rating
 - Bus Rating
 - Redundancy
 - Ambient Management
- 3) Transformer
 - a) HV XFMR
 - b) Drive XFMR
 - c) S.S. XFMR
 - Voltage Rating
 - Weight management
 - Thermal management
 - Emerging Technology
- 4) Cable Technology (HV)
- 5) Drive Technology
 - a) Cyclo b) Sync
 - c) LCI d) Future
- 6) Propulsion Motor
 - a) Synchronous
 - b) Asynchronous (Induction)
 - Voltage/Power Level
 - Weight management
 - Thermal management
 - PM Motor
 - HTS Motor
- 7) Steady State Electrical System Analysis
- 8) Steady State Transient System Analysis
- 9) Real-time Transient Analysis
- 10) Short Circuit Protection and Coordination
 - Electric Plant Stability
 - Real-time for reconfiguration in view of System Stability, as well as battle sustenance
- 11) System of System Automation
- 12) Neural net / Agent Technology
- 13) Systems fault detection and automated reconfiguration
- 14) Time domain System performance analysis for a specified time interaction
- 15) Power demand for high-energy weapon system
- 16) Shipboard Space management
- 17) Shipboard Power management
- 18) Smart motor controllers
- 19) Smart/Open architecture universal Control System
- 20) Building block approach (Module to Equipment to System)
- 21) Fiber Optic Technology
- 22) Wireless Technology
- 23) Ship Service Distribution
- 24) Weapon Service Distribution



NAVAL IPS-ZONAL DISTRIBUTION



THE IEEE-45 WILL REMAIN AS A MOTHER STANDARD

IN ADDITION, THE FOLLOWING DOT STANDARDS HAVE BEEN APPROVED:

- IEEE-45.1 FOR POWER SYSTEM DESIGN**
- IEEE-45.2 FOR CONTROLS**
- IEEE-45.3 FOR SYSTEM INTEGRATION**
- IEEE-45.4 FOR MARINE SECTOR AND MISSION SYSTEMS**
- IEEE-45.5 FOR TESTING**
- IEEE-45.6 FOR SAFETY PRACTICES**
- IEEE-45.7 FOR SWITCHBOARD**
- IEEE-45.8 FOR CABLE INSTALLATIONS**

THE FOLLOWING ADDITIONAL IEEE STANDARDS FOR SHIPBOARD APPLICATION:

- IEEE-1581 SHIPBOARD CABLE (Published)
- IEEE-1581.1 INSULATED BUS PIPE (PAR Approved)
- IEEE-1662 POWER ELECTRONICS APPLICATION FOR SHIPS (Published)
- IEEE- 1713 MV SHORE POWER (Will be published this year)*
- IEEE- 1709 GUIDE FOR MVDC DISTRIBUTION ON SHIPS (Published)
- IEEE- 1826 POWER ELECTRONICS OPEN SYSTEM INTERFACES IN ZONAL ELECTRICAL DISTRIBUTION SYSTEM- 100KW AND ABOVE

*** IEEE-1713 IS BEING DEVELOPED IN COOPERATION WITH IEC GROUP AND ISO GROUP AS A TRIPLE LOGO STANDARD**

SUPPORT GROUP

- SHIPYARDS
- UNIVERSITIES
- ABS –SVR GROUP AND NVR GROUP
- USCG
- NAVSEA
- ONR
- EQUIPMENT SUPPLIERS
- INDUSTRY EXPERTS

NEXT IEEE-45 DOT STANDARD JOINT MEETING FOR 2010

- **October 25-27, 2010**
- **Location: 901 N. Stuart St, Suite 603, Arlington
VA 22203**

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QUESTION & ANSWER SESSION

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