



# AnywherEnergy™ (AE)

A Modular Energy Platform

***2017 OHIO FUEL CELL SYMPOSIUM***

**LORAIN COUNTY COMMUNITY COLLEGE**

**March 30-31, 2017**

**Benson P. Lee**

**Technology Management, Inc.**

**Cleveland, Ohio 44108**

# Technology Management, Inc. (TMI)

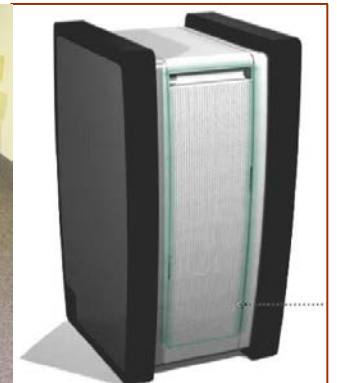
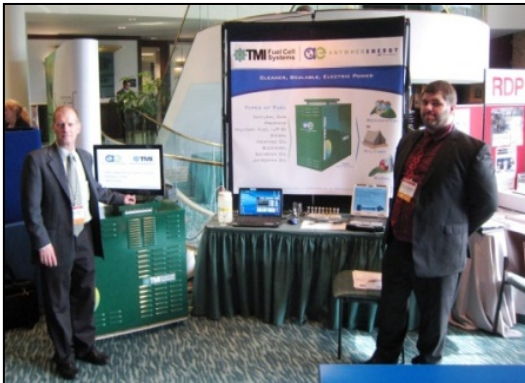
*Ohio's Oldest Fuel Cell Systems Company*

## About

- Private, Ohio C Corporation (Cleveland, Ohio)
- Planar solid oxide fuel cell (SOFC) technology acquired from BP.
- R&D completed. TRL-6 status.
- Multi-kilowatt class systems field-tested.
- Low cost design validated.
  - Appliance-like simplicity.
  - Size and weight of a dishwasher.
- Combined Heat and Power (CHP).

## AnywherEnergy™ Features

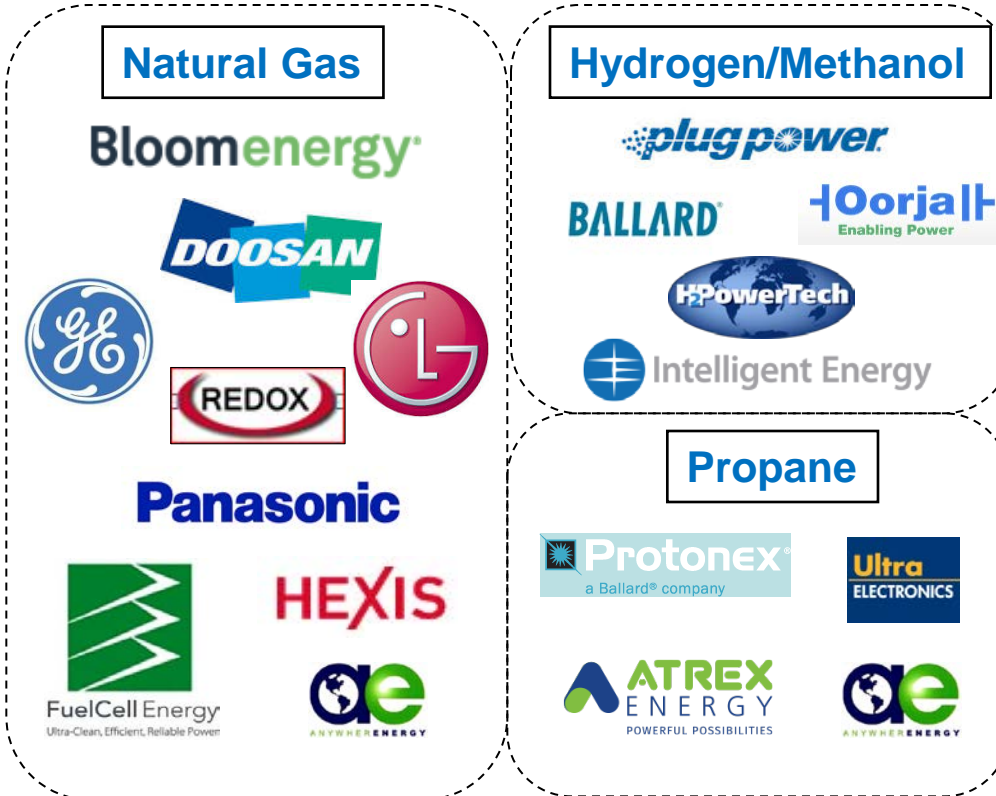
- “Flex-fuel.”
  - Liquid and gaseous fuels.
  - Interchangeable “on the fly”
  - Sulfur tolerant.
- Load-follows changing demands.
- Modulate heat and electricity output.
- Integrated with solar panels and micro-grids.
- “Plug and Play” maintenance without special tools or equipment



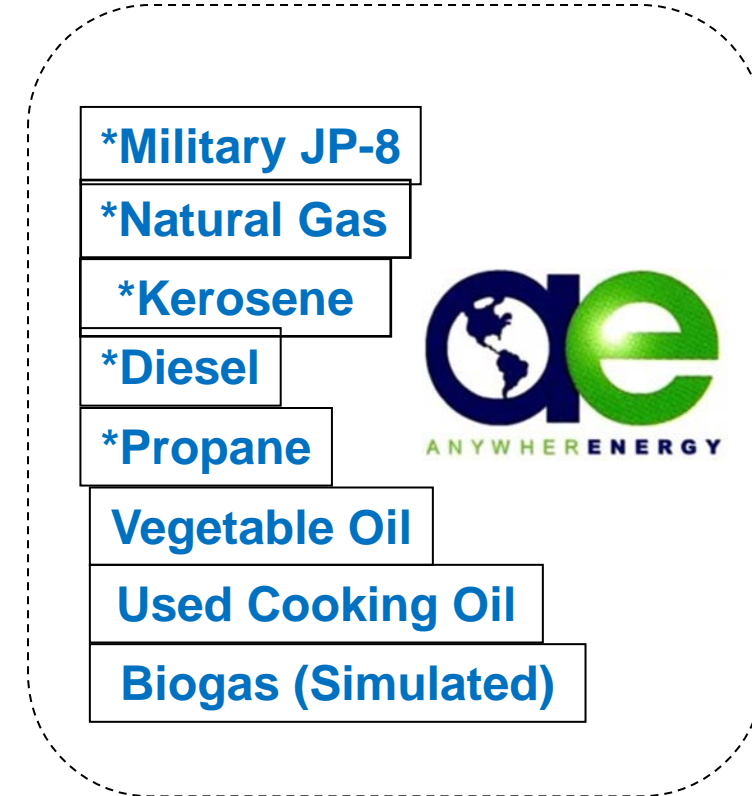
# AnywherEnergy™ (AE) = Flex-Fuel

(OPERATES ON EVERYDAY FUELS INTERCHANGEABLY)

## Gaseous and Specialty Fuels



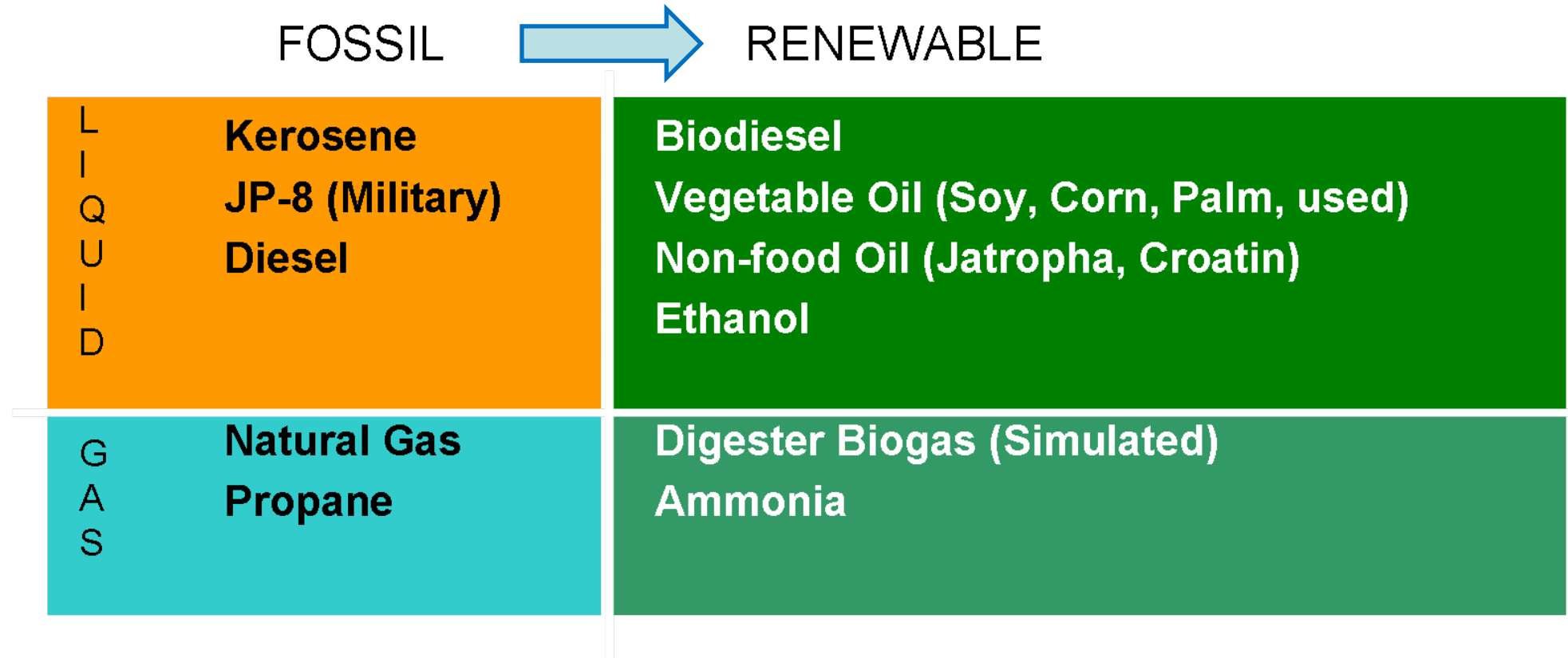
## Liquid and Gaseous\*



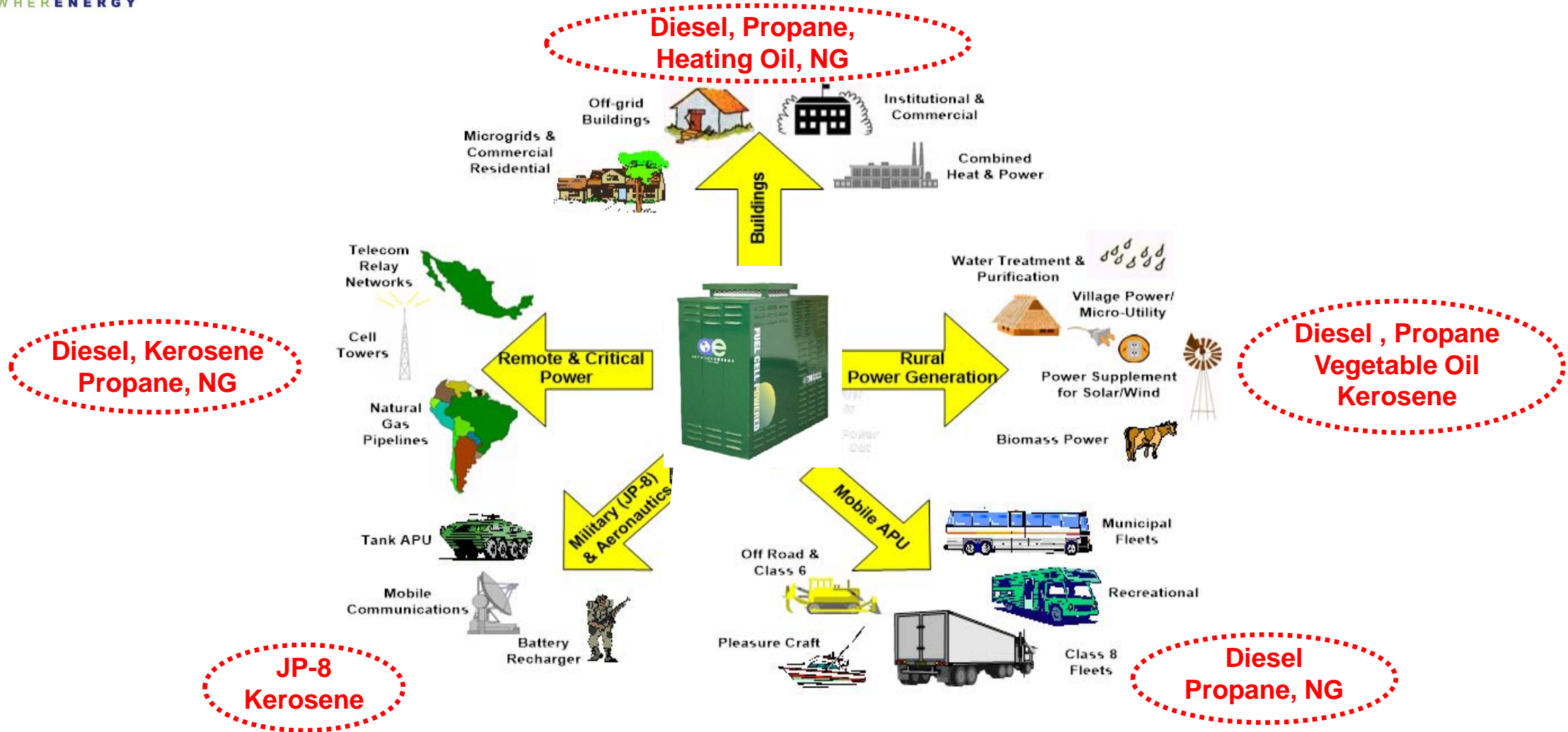
\* Fuel Desulfurization NOT required

# AE Fuel Interchangeability

## Migration Path from Carbon to Carbon Neutral Footprint



# AE Flex- Fuel → Access to Fuel-limited Markets





# AE BOP System Requirements

TMI currently uses COTS

Goal: 100% duty cycle/ 5-10,000 hour MTBM

## ❑ Air Handling

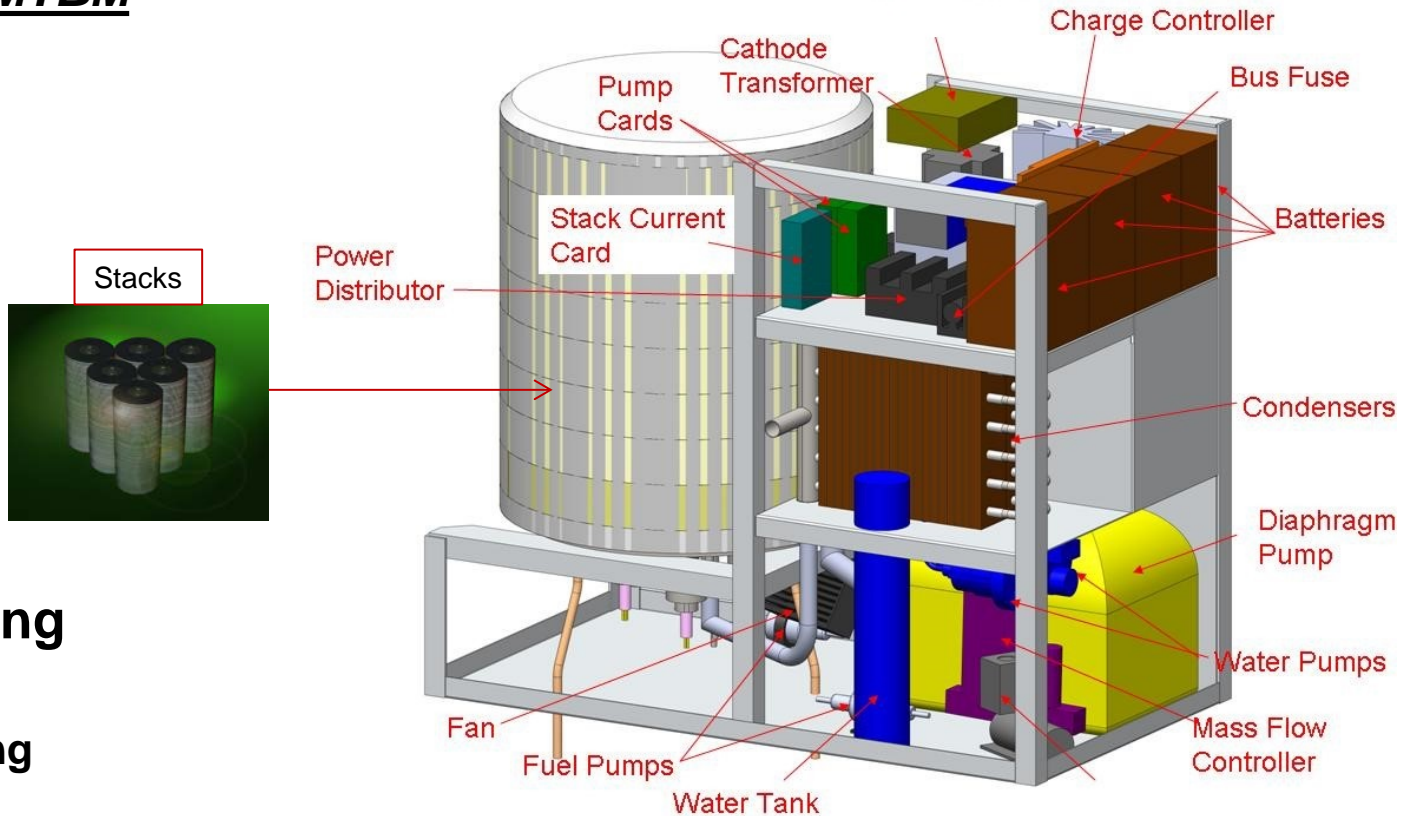
- ❑ 100-200 lpm, 3-4 psi

## ❑ Liquid Pumps

- ❑ Water 0-50ml/minute
- ❑ Fuels – diesel, veg. oil 0-25 ml/minute

## ❑ Specialty-alloy cylinders / tubing

- ❑ High Cr/Ni 800-900C
- ❑ Thin wall, 3-5" diameter, 8-12" long





# AE Applications (and Supplier Opportunities)

## “Looking Around the Corner”

### Electrical Controls and Monitoring

- Microgrids, grid-connected and islanded
  - Distributed energy resource services
- Multi-nodal wireless networks - resilience from cyber attacks

### Heat Exchangers

- Waste to fuel and biochar
- Absorption refrigerators for vaccines
- CHP and cooling for yachts, trucks, railroad cars
- Water purification for drinking and medical
  - Pasteurizing dairy and fruit juices
  - Autoclaving medical instruments

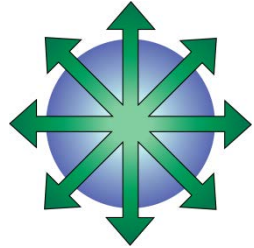
### Turnkey Systems Solutions

#### Drop-in

- Remote medical clinics
- Refugee camps
  - First Nations
  - Mining

#### Rapid Response

- Epidemic Control - Ebola
- Command and control centers
  - Disaster relief
  - National Guards - US
  - Military - worldwide



**Technology Management, Inc.**

CLEVELAND, OHIO 44108 USA



**THANK YOU ! – PLEASE VISIT OUR BOOTH !**

**Benson P. Lee**

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