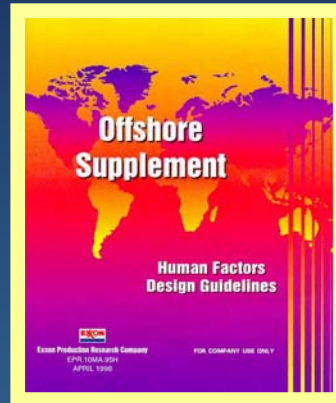


ExxonMobil's Approach to Human Factors



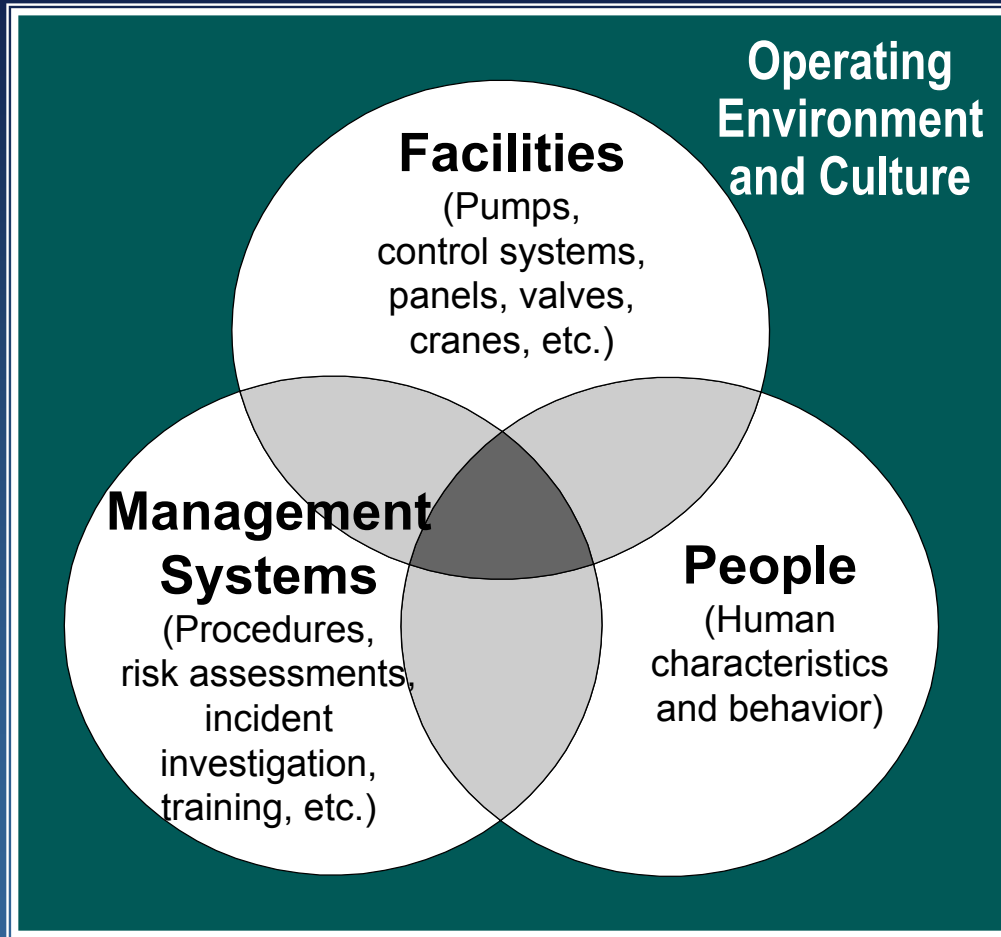
**Second International Workshop on
Human Factors in Offshore Operations
April 8-10, 2002**

**Tom Theriot, Manager Safety, Health & Environment
ExxonMobil Production Company**

Presentation Outline

- **Definition**
- **Objectives of Human Factors Efforts**
- **Background - Why Human Factors?**
- **Human Factors Spectrum**
- **Corporate Human Factors Strategy**
- **Human Factors Focus Areas**
- **New Human Factors Technology**

Human Factors - Definition



Human Factors are:

the integration and application of scientific knowledge about

- people
- facilities
- management systems

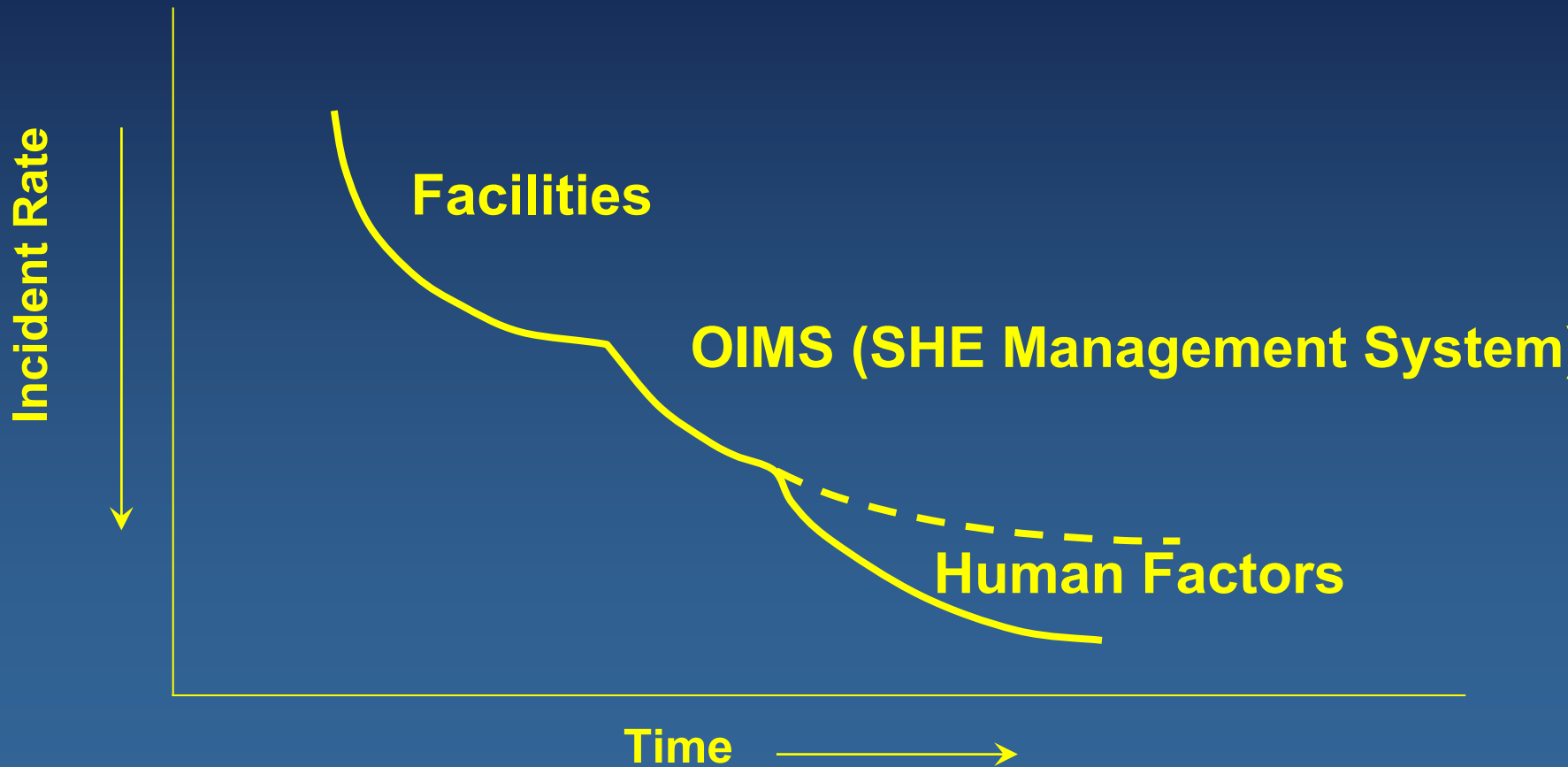
to improve their interaction in the workplace.

Objectives of Human Factors Efforts

- Our goal is to reduce human errors, resulting in . . .
 - safer operations (fewer incidents),
 - fewer production upsets,
 - higher efficiencies, and
 - enhanced quality.

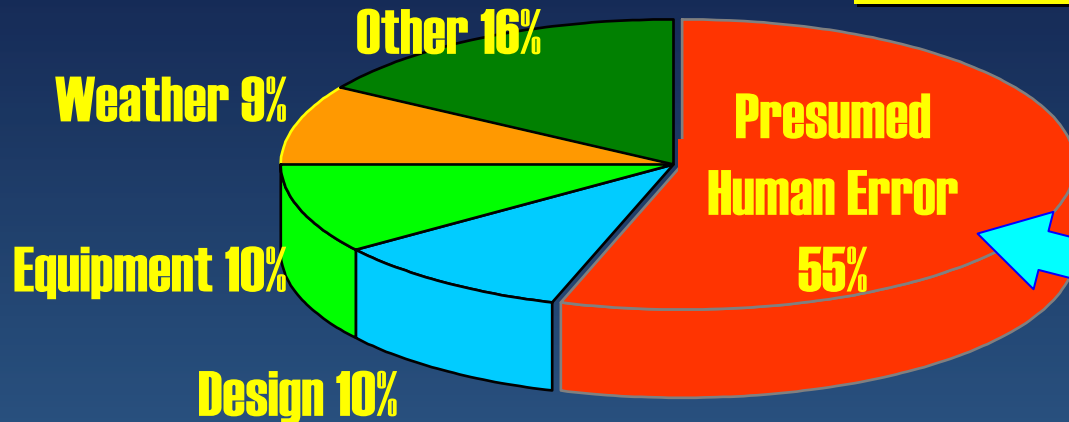


Incident Performance Improvement History



Why Are We Working on HUMAN FACTORS?

Incident Causal Factors



These are the incidents addressed by "human factors"

Implemented Hardware Solutions

- Protective Systems
- Added Safety Factors
- Reduced Operator Interventions

Pursued Traditional Approaches

- Training
- Motivation Campaigns
- Discipline for Violators

Implemented SHE Management Systems (OIMS)

- Management Leadership
- Risk Assessments
- Procedures
- Incident Investigations



**BUT
PEOPLE
STILL MAKE
ERRORS**

**WE MUST
ADDRESS
"WHY?"**

The Human Factors “Spectrum”

Workplace Design

Equipment Design

Work Environment

Physical Activities

Job Design

Information Transfer

Personal Factors

Workplace Design

- Facility layout
- Workstation configuration
- Accessibility

Equipment Design

- Displays
- Controls (valves, handwheels, switches, keyboards)
- Hand tools
- Control panels

Work Environment

- Noise
- Vibration
- Lighting
- Temperature
- Chemical exposure

Physical Activities

- Force
- Repetition
- Posture

Job Design

- Work schedules
- Workload
- Behavior-based safety
- Job requirements vs. peoples' capabilities
- Task design

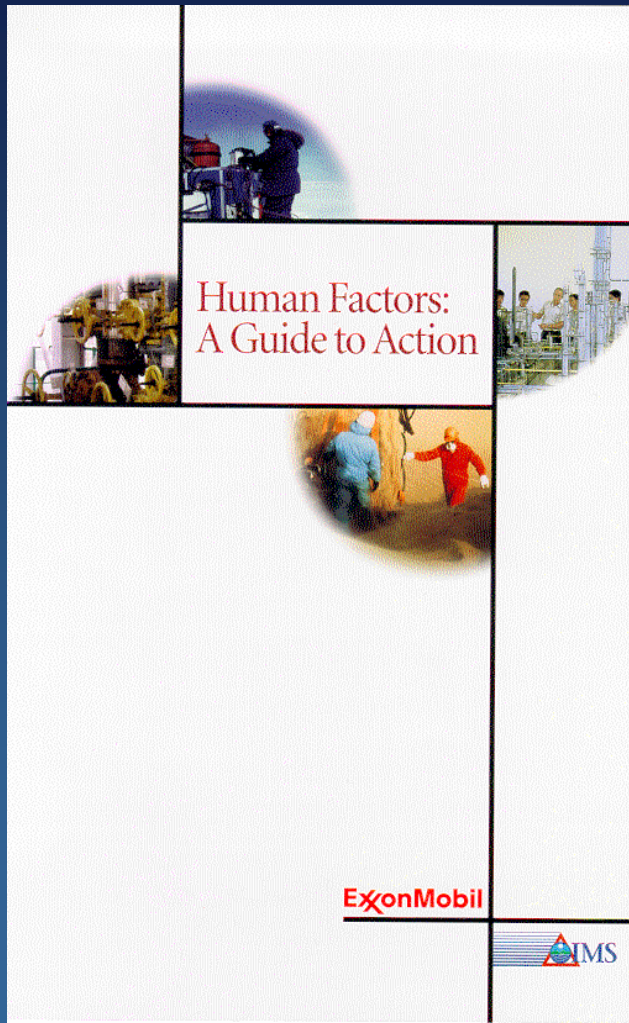
Information Transfer

- Labels/signs
- Instructions
- Procedures
- Communications
- Training
- Decision making

Personal Factors

- Stress
- Age/culture
- Fitness
- Fatigue
- Boredom
- Motivation
- Body size/strength

ExxonMobil's Human Factors Strategy

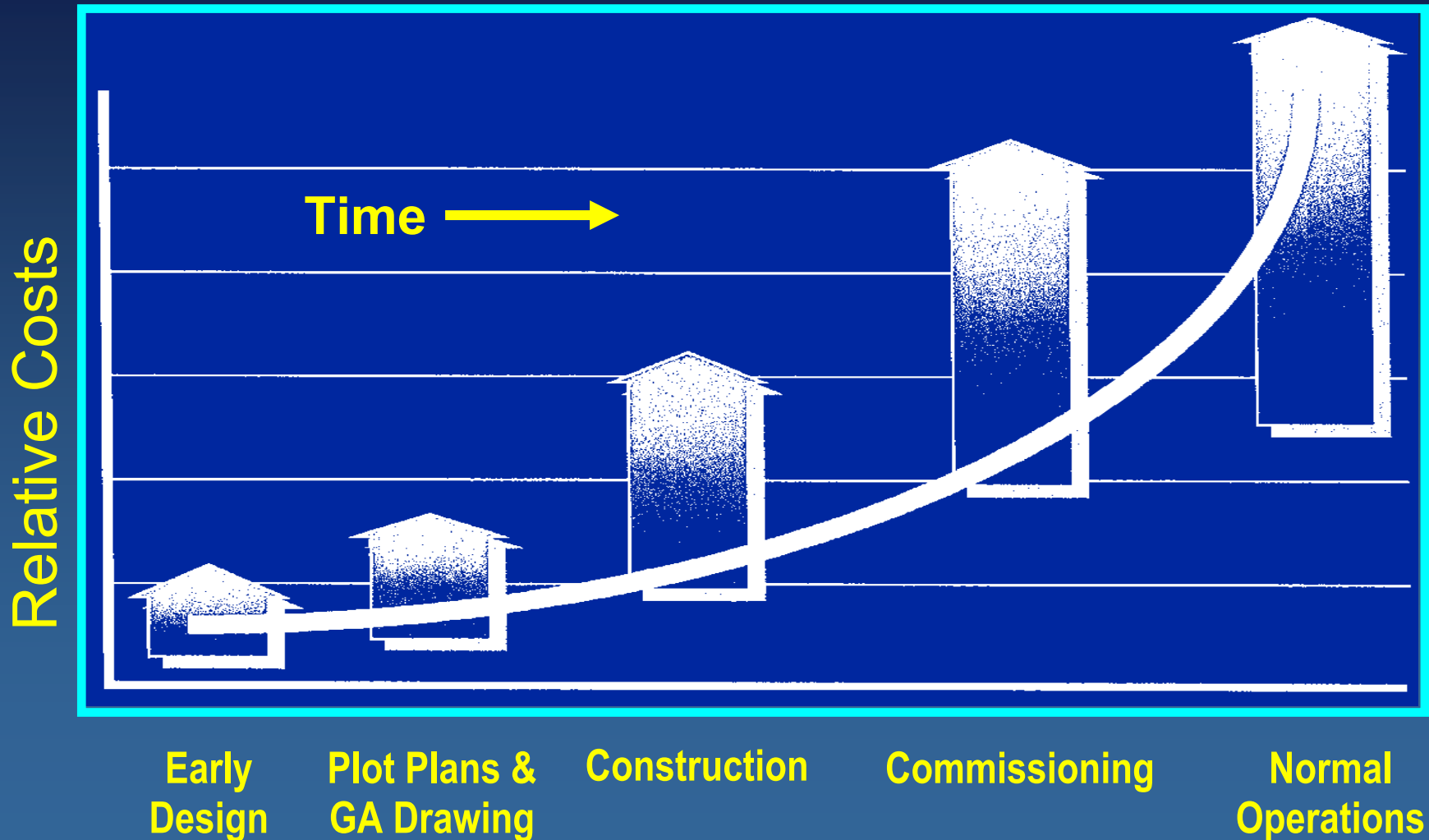


- **HF efforts are driven by specific needs/opportunities for improvement**
- Improvements are sustained by building HF into existing Management Systems, Engineering Standards, and Operating Practices
- **Effective HF resources and tools are provided to aid implementation**
- Roles and responsibilities for HF are clearly defined; management leadership key
- **Results are evaluated and shared to enhance benefits and effectiveness**

Human Factors Focus Areas

- **Design of New Facilities**
- **Risk Assessment**
- **Incident Investigation**
- **Training**
- **Drilling**
- **Application in Existing Operations**

The Cost of Using Human Factors in Design

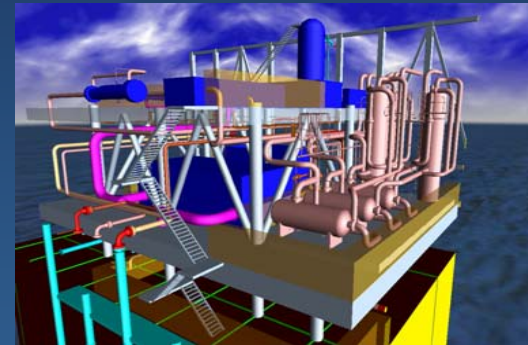


New HF Technology Applications

- **ExxonMobil research organizations identify new HF technology/tools through:**
 - leveraging off other industries (e.g., aviation, nuclear, aerospace)
 - obtaining input from operating/project organizations

3D CAD Projects

- Incorporate HF considerations (access, spacing, valve location) into 3D CAD models
- Create guidance document for designers



Automated Control Systems

- Develop standards for control system interfaces (screen design, alarms, displays, etc.)

