

More Effective & Profitable Refinery Management

COURSE AIMS:

The aims of this course are to help Plant Managers, Senior Engineers and Senior Technologists at NIORDC to develop strategies, tools, techniques, knowledge and insights that will allow them to improve the effectiveness and, therefore, safety and profitability of their refinery operations.

COURSE DURATION:

The course will be delivered in Iran over a 9-day period.

COURSE TUTORS:

Two experienced presenters will be used to cover the range of topics. One tutor will have a background in Refinery Operations and the other tutor will be a specialist in Refinery Maintenance & Engineering. Both presenters will have wide experience of managing at a senior level in refineries and have significant experience of delivering world class performance in their respective fields. Curriculum Vitae are enclosed for the nominated tutors:

Refinery Operations:	John Davies
Refinery Maintenance & Engineering:	Jim Wardhaugh

COURSE METHODOLOGY:

Course Tutors will be keen to facilitate a high degree of interaction between delegates and tutors. Training materials will be based on practical experience of refinery operations, maintenance and engineering. Exercises and case studies will be used where appropriate to enhance and extend the learning experience.

COURSE MATERIALS

All course delegates will be given a full set of professional presentation and supporting course materials.

EFFECTIVE & PROFITABLE REFINERY MANAGEMENT

PART 1 - GENERAL

Introduction. – (3 hours)

Jim Wardhaugh.

- Setting the Scene
- Administration Issues
- Overview of the programme
- What are the key goals of the business?
- What are the things we have to be good at to achieve these goals?
- Some benchmark data showing the gap between poor and top performers
- Exercise: What do delegates' refineries have to do to significantly improve their performance? What are the barriers or difficulties they face?

Following from this we can agree minor additions to the programme or changes in emphasis.

PART 2 – BUSINESS APPROACHES

Some Business Theories and Models – (3 hours)

Jim Wardhaugh

- Maslow, McGregor, Herzberg and Adair on Leadership and Motivation
- Covey on Effectiveness
- Porter on the Value Chain
- Porter and Hamel on Competitive positioning
- Kaplan and Norton's Balanced Scorecard
- Malcolm Baldrige model for self audit
- Solomon and others – organizational characteristics of top performers
- Exercise: Benchmarking characteristics of NIORDC refineries against those of top performers.

Organisation and Manpower – (1.5 hour)

Jim Wardhaugh

- Functional or business unit organization – pros and cons
- Structure with respect to sharing and/or centralisation of support services
- Sharing or pooling services with other local industries
- Typical staff organization and numbers for a typical refinery
- Comparison of costs for own and contractor manpower

Outsourcing, Contracts and Contractors – (2.5 hours)

Jim Wardhaugh

- Approach of top performers
- Kraljic's Purchasing Model - The in house / outsource decision
- Core business concept - What capabilities to keep in house
- Extent of services that contractors can provide (bodies, expertise, etc)
- Types of contract
- Managing contractor performance (delivery, quality, incentives, penalties)
- Is partnership a reality?
- Comparison of costs for own and contractor manpower
- Exercise: Develop a contracting strategy for a typical refinery operation.

Materials and Spares and Warehousing– (1 hour)

Jim Wardhaugh

- Minimum stock in warehouse
- Risk based methodologies for stocking decisions
- Call off arrangements with suppliers
- Pooling of infrequently used materials, equipment and expertise

Competitor Benchmarking – (3 hours)

Jim Wardhaugh

- Solomon Associates industry norms and top quartile performers
- Data gathering – methodology – interpretation of results
- Management action plan and priorities
- Managing change
- Driving improvements with Key Performance Indicators
- Exercise: Identification of areas (production and maintenance) where performance needs to be improved.

PART 3 – PLANT INTEGRITY, RELIABILITY AND MAINTENANCE**Plant Integrity – (2 hours)**

Jim Wardhaugh

- Society and government view of risk and their expectations
- Regulators and relationship with regulators
- Technical Integrity
- Changing role of inspection groups
- Risk Based Inspection
- Benefits of a focused approach.
- Exercise: Derivation of risk based inspection interval for piping and vessels.
- Instrumented Protective Functions – benefits of a risk based approach
- Scrutiny and management of plant changes and modifications

Plant Reliability – (2 hours)

Jim Wardhaugh

- Consequences of unreliability
- Plant reliability measurements
- Typical causes of unreliability
- Performance of poor and top refinery performers
- Elimination of failures as a common goal of operations and maintenance
- Structure and an approach to manage reliability and degradation
- Discipline, data, and diligence in managing quality, knowledge and compliance.

Maintenance – (3 Hours)

Jim Wardhaugh

- Modern maintenance strategies (run to failure, timed based, condition monitoring)
- Risks and commonly used processes in maintenance management to minimize risk (RCM, RCA, RBI, IPF, etc)
- Exercise: Duty-standby pumps
- Exercise: Algorithm for choice of maintenance strategy
- Managing work requests (priority profile, challenge low value work, etc)

- Exercise: Chart current process for issue of work permits on a time line
- Exercise: Productivity – list factors that cause loss of productivity – assign weightings
- Effective scheduling (permits, materials, equipment, personnel etc).

Shutdown Management – (3 hours)

Jim Wardhaugh

- Maximize plant availability
- Good reasons for shutdowns
- Clear goals driven by profit or integrity
- Strategies for success
- Framework for shutdown development and execution
- Organization, roles, targets, achieving minimum scope
- In-house resources vs. contracted resource
- Structure of contract
- Planning tools
- Detailed plans for key areas (competence, permits, productivity, leak free start up, progress and cost monitoring and reporting, safety, materials, etc).

Review of Course So Far- (1hour)

Jim Wardhaugh

PART 4 – AN OPERATING PERSPECTIVE – THE ESSENTIALS

Safety – (2 hours)

John Davies

- Major hazards inventory;
- Emergency response plans;
- Operating and standing instructions;
- Plant / site emergency procedures;
- Permit to work systems;
- Design change procedures;
- Safety auditing;
- Root cause analysis;
- Control of contractors;
- Employee involvement;
- Training and records;
- Personnel safety;
- Process safety;
- HAZOP;
- Accident, incident and near miss reporting and follow up.

Environmental Management – (2 hours)

John Davies

- Measurement and control of releases to air, water and ground
- Compliance with regulations
- Segregation of effluents
- Effluent volume reduction
- Operational releases
- Vents and flares

- Storage tank breathing
- Equipment leakages
- Furnaces and combustion
- Dust and soot
- Selection of fuels
- Sources of noise
- Oil spill contingency planning.

PART 3 – PUSHING FOR INCREASED PROFITABILITY

Refinery Profit Management – (6 hours)

John Davies

- Refinery objective
- Crude oil and feedstock options
- Marketing options
- Crude and feedstock selection process
- LP models
- Plant performance
- Yields and qualities
- Blending
- Product quality give away
- Working stocks
- Retrospective performance analysis.

Process Plant Efficiency – (3 hours)

John Davies

- Overall site / unit energy consumption data (fuel, steam, electricity, other) actual vs. design or best practice
- Breakdown by individual plant and facility including storage areas
- Cost data and tariffs
- Direct loss records (flare, effluent streams, offsite waste disposal)
- Estimate of indirect losses (tank breathing, evaporation, water content of crudes and feedstocks).

Financial Management – (3 hours)

John Davies

- Budget setting process
- Operating cost reporting
- Variance analysis
- Capital budget and project management
- Operating cost breakdown
- Fixed and variable elements
- Cost reduction programmes

Production Scheduling and Planning – (3 hours)

John Davies

- Conversion of LP output to daily schedule
- Links to crude purchasing / product sales
- Computerized scheduling aids – quality tracking.

PART 6 – PROGRAMME REVIEW - (1 hour)

- What went well
- What didn't go so well
- Areas of improvement
- Where now?