NIORDC

NIORDC Technical Challenges During Sanction

Saied Mahjoubi

January 2017

Technical Challenges

NIORDC

- Sanctions made some problems for refineries, but they did strenghten our industries
- We had to provide most of our needs from local manufacturers & understand that they are even in some cases more efficient.
- After sanction they are able to compete with their overseas rivals

Technical Challenges

NIORDC

- Our Industry has growth with the unbelievable speed so that we can provide more than 56% of refinerty needs from local manufacturer
- At the moment we enjoy our domestic service providers for our refineries
- Equipmwnts, Catalysts , Chemicals and Maintenance Services has been realy developed

Technical Challenges

NIORDC

- Fixed Equipments
- Instrumentation
- Rotary Equipmwnts & Spare Parts
- Catalysts & Chemicals
- Maintenance

Domestic Manufacturing Ability

NIORDC

- Pumps > 65%
- Compressors > 30%
- Heaters & Boilers > 45%
- Steam & Gas Turbine > 45%
- Catalysts & Chemicals > 30%

Fixed Equipment

NIORDC

- Vessels/Towers & Reactors > 70%
- Internals/ Pipe & Fittings > 80%
- Heat Exchangers >70%
- Fans & Air Coolers > 75%
- Heaters & Boilers > 45%
- Storagr Tanks > 98%

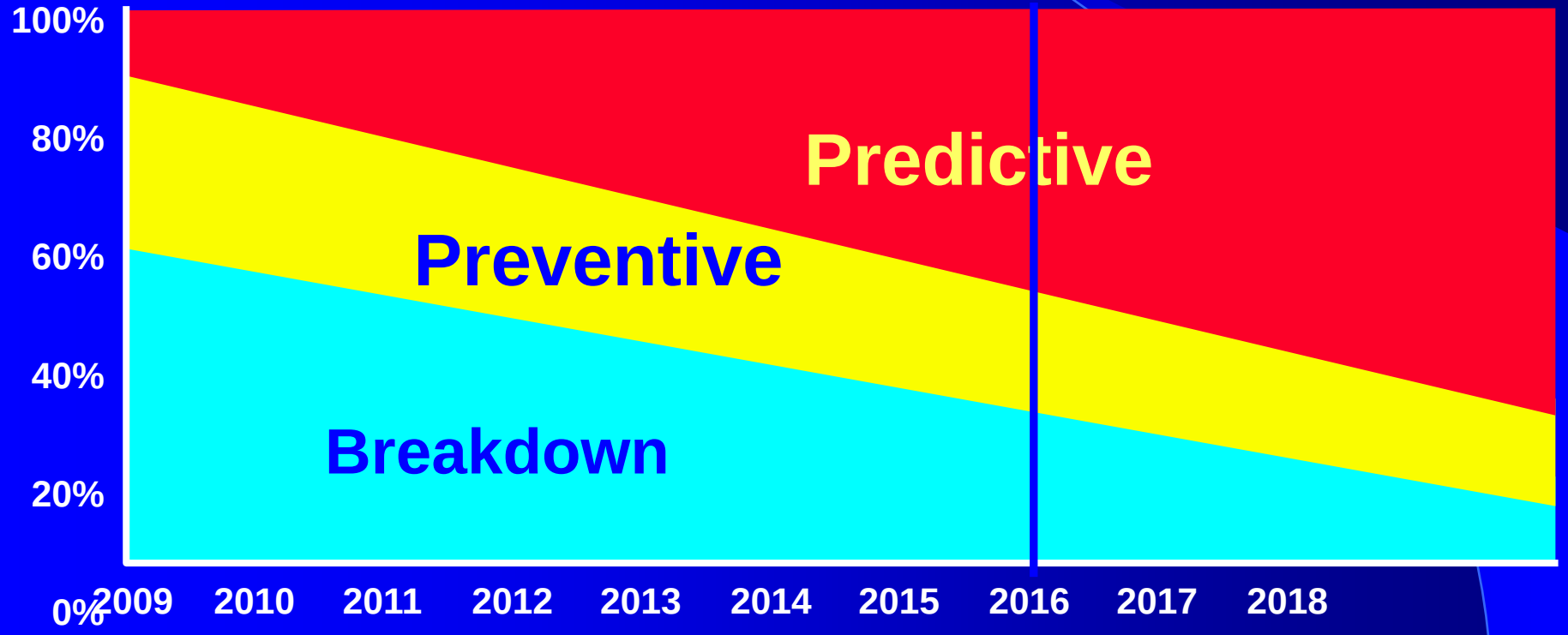
INSTRUMENTATION

NIORDC

➢ Control Valves	70%	DCS	50%
➢ Programming	85%	F&G	35%
➢ Cabling	90%	Analyzers	20%
➢ Indicators & Gauges	80%	MOV	10%
➢ Tank Gauging	45%	PLC’s	80%
➢ Transmiters	60%		
➢ Electronic Cards	40%		

Refineries Maintenance Plan

NIORDC



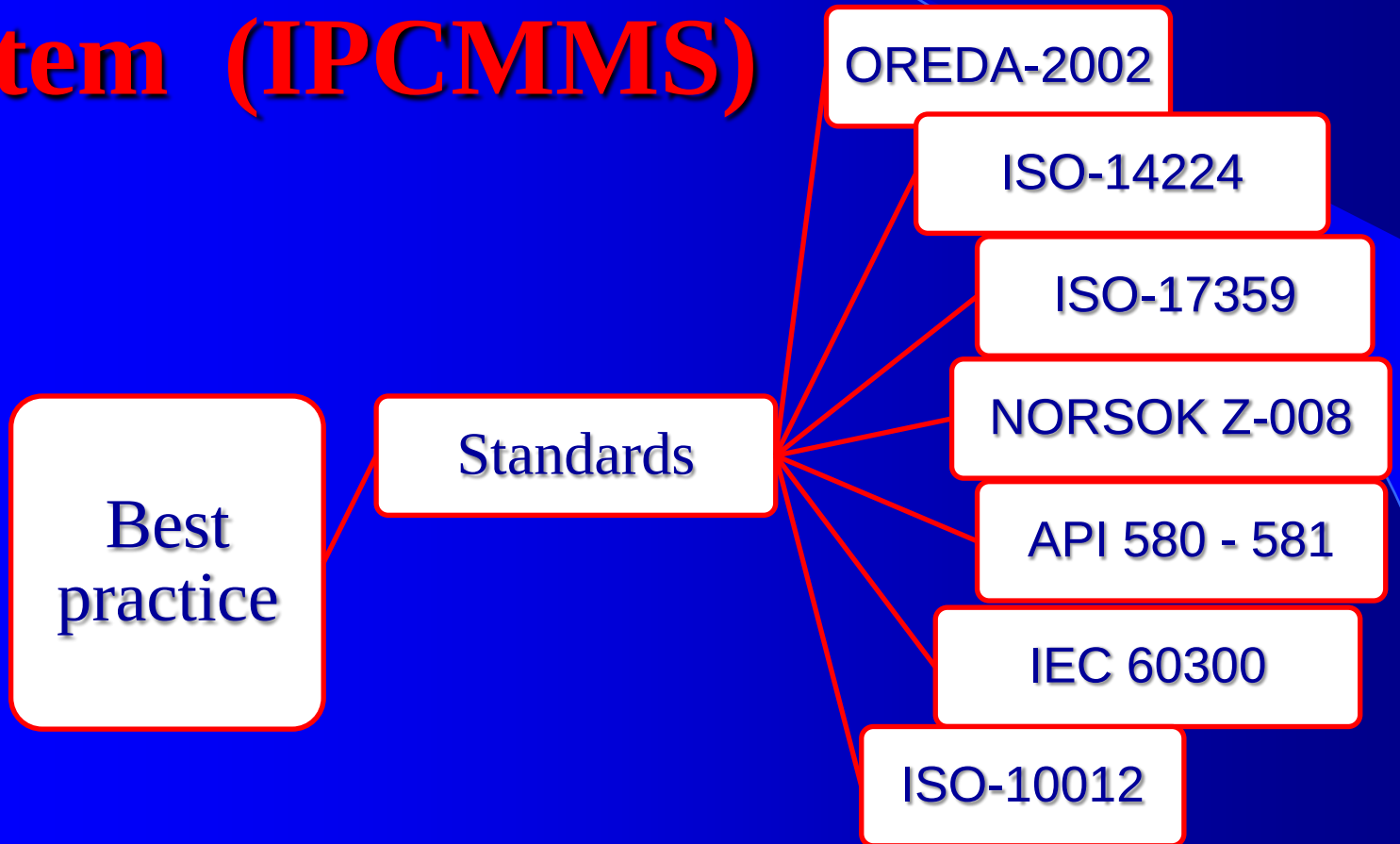
Asset Oriented Approach CMMS

NIORDC

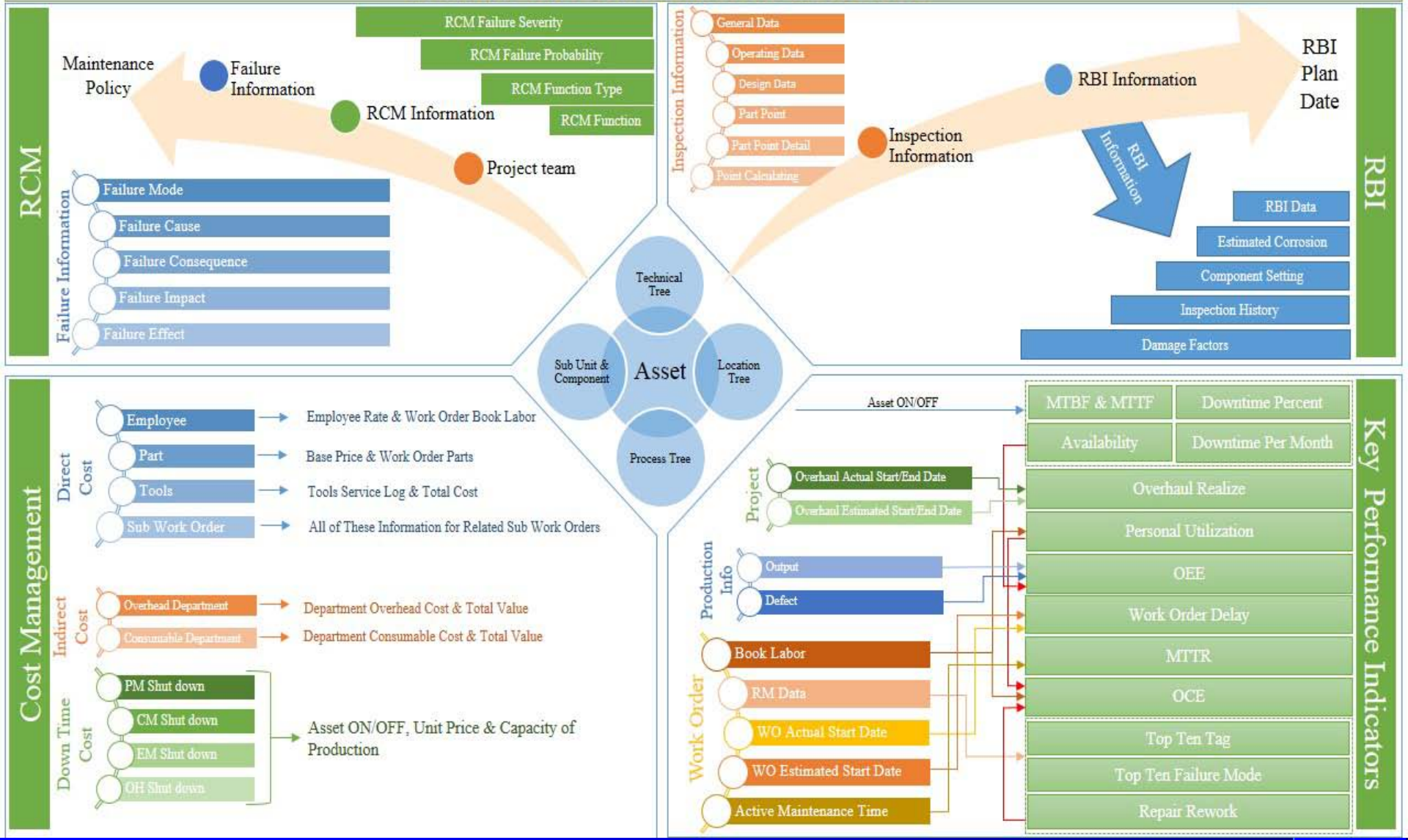
- Because of keeping records of asset maintenance, we selected this approach.
- As a result, all transactions of work orders are oriented around asset.

Iranian Computerized maintenance management System (IPCMMS)

NIORDC



IPCMMS IMPLEMENTATION ROADMAP



Plant Utilisation and Downtime

Atmospheric Crude Distilling 2003

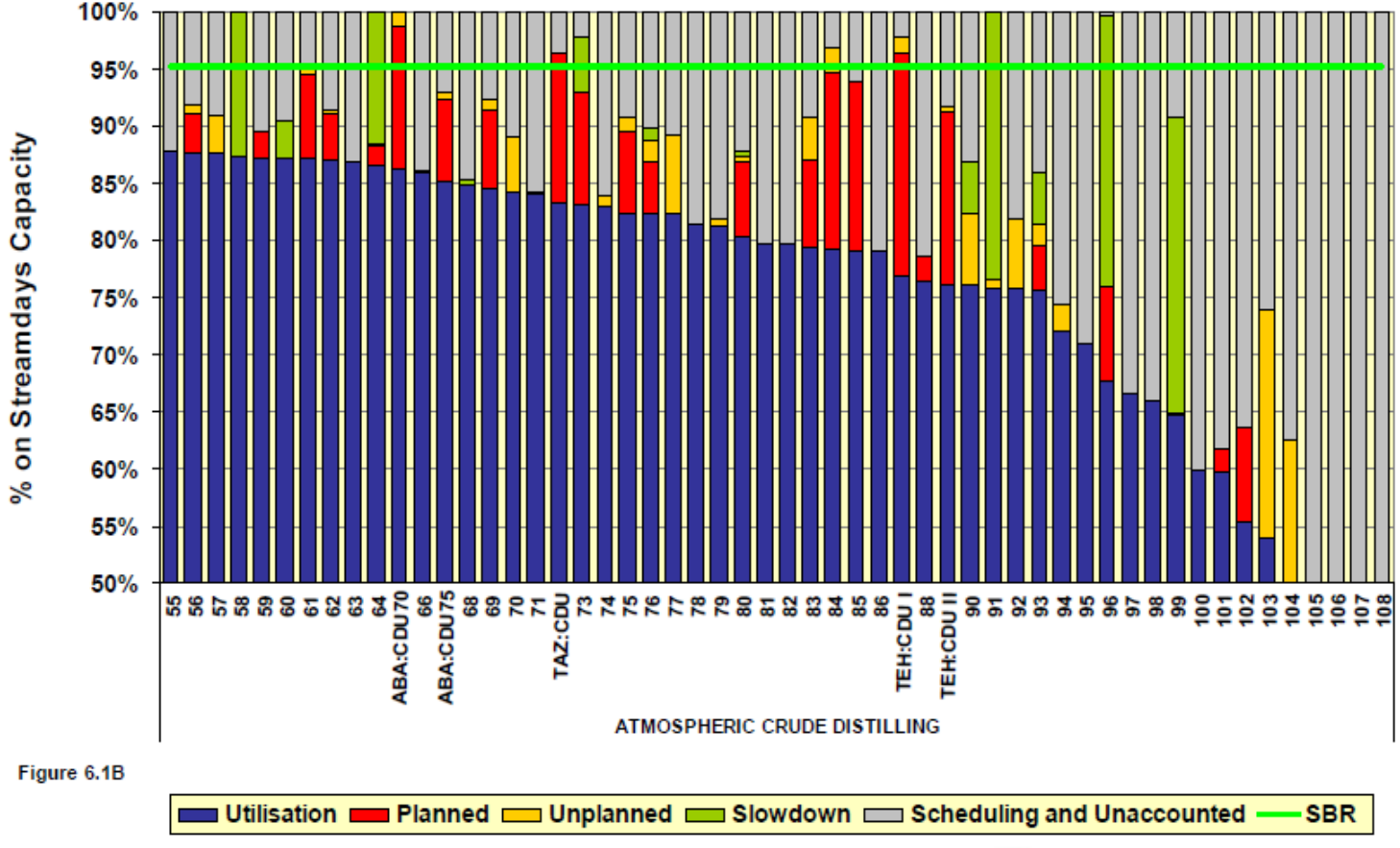
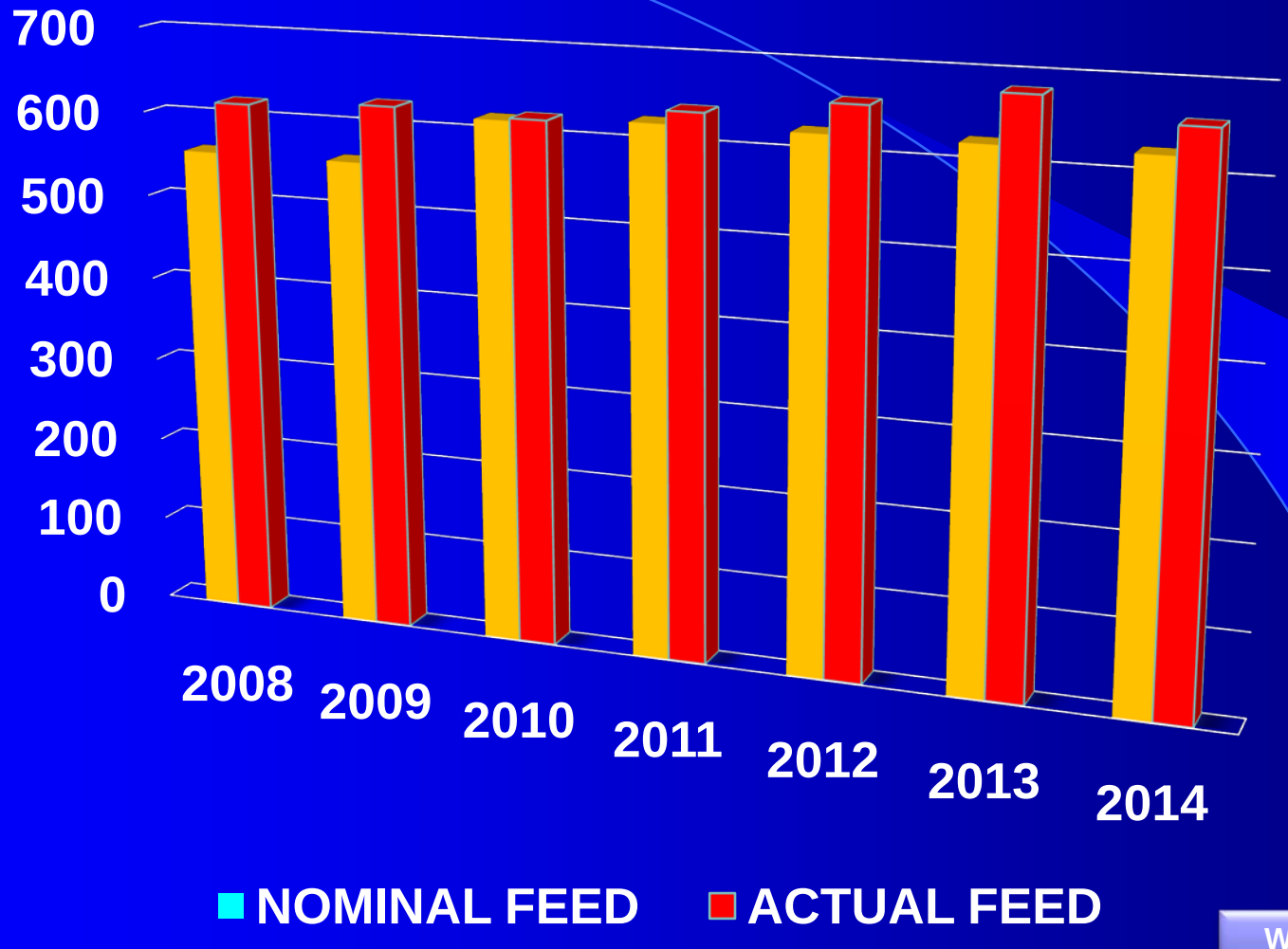


Figure 6.1B

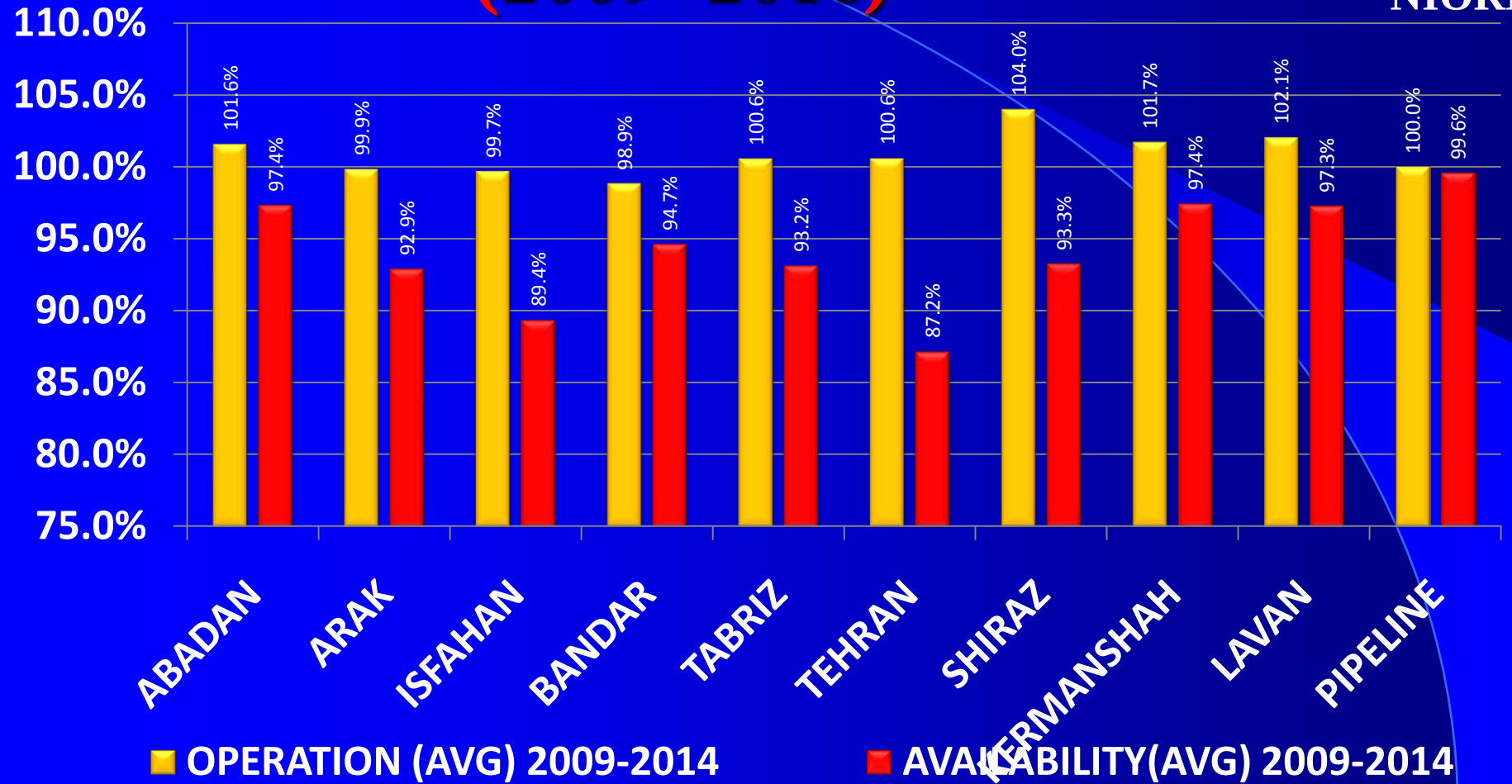
Planned Vs Processed Feed

NIORDC



Availability Vs Operation (2009- 2016)

NIORDC



Turnaround Duration

Atmospheric Crude Distillation

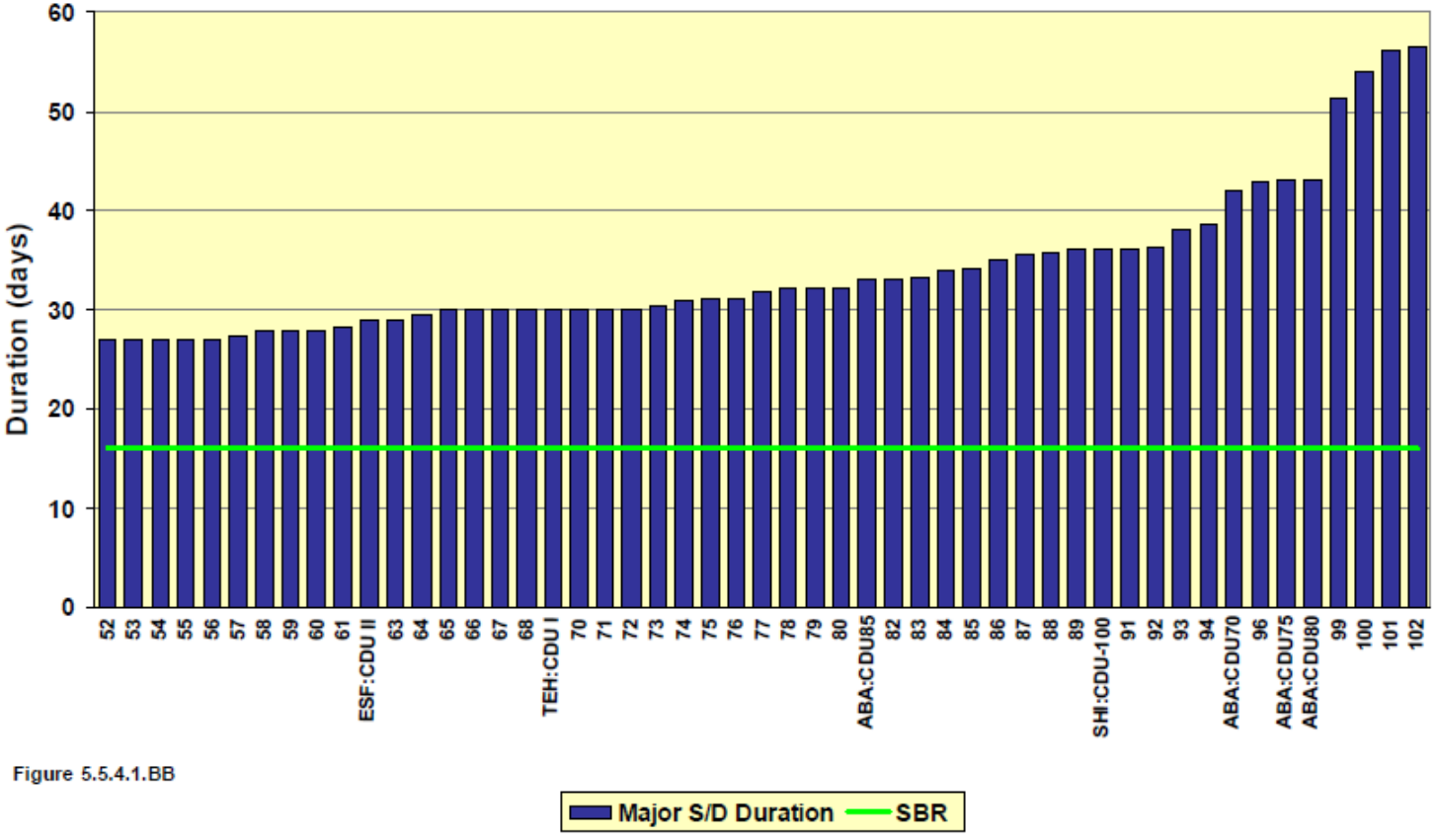
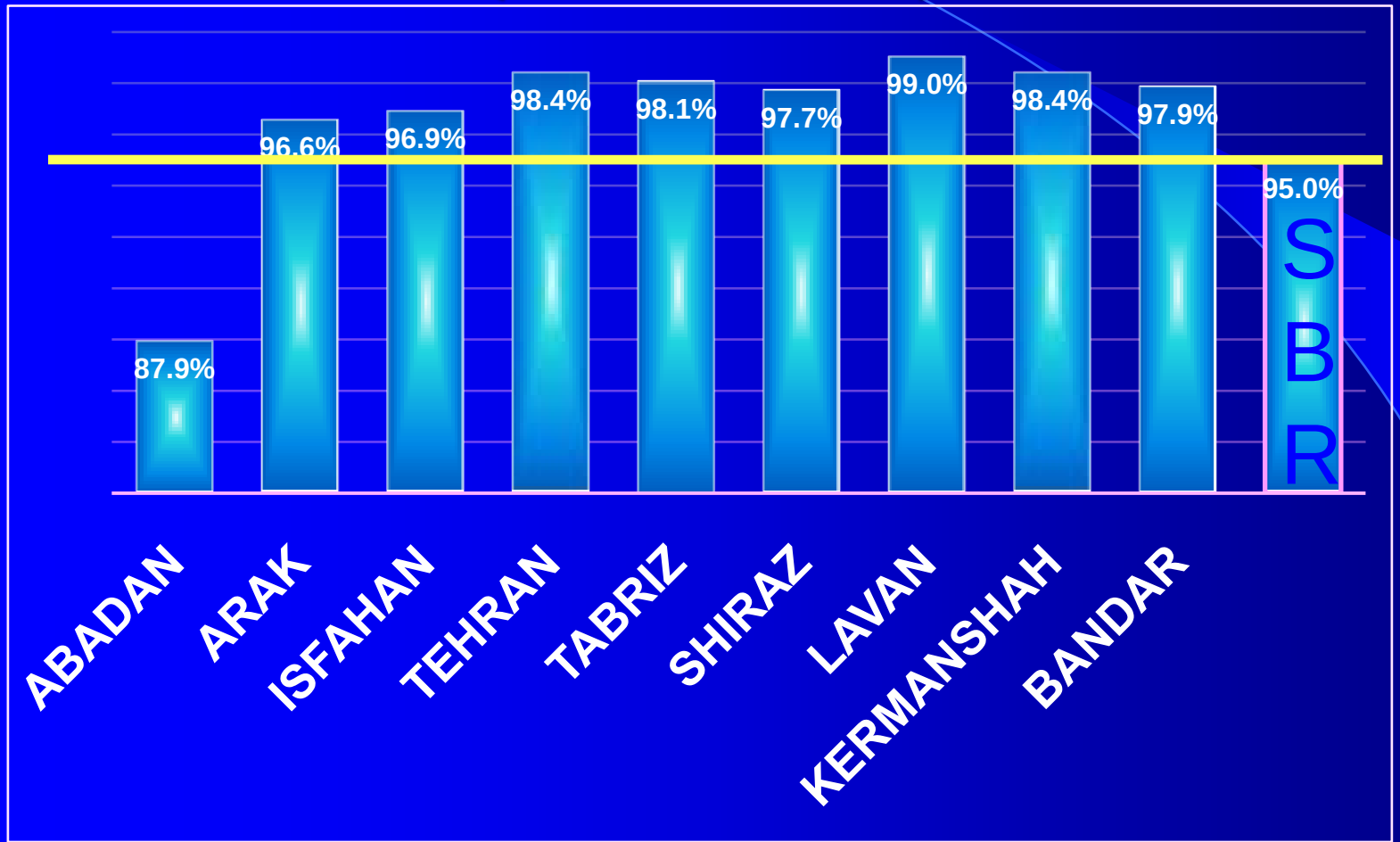


Figure 5.5.4.1.BB

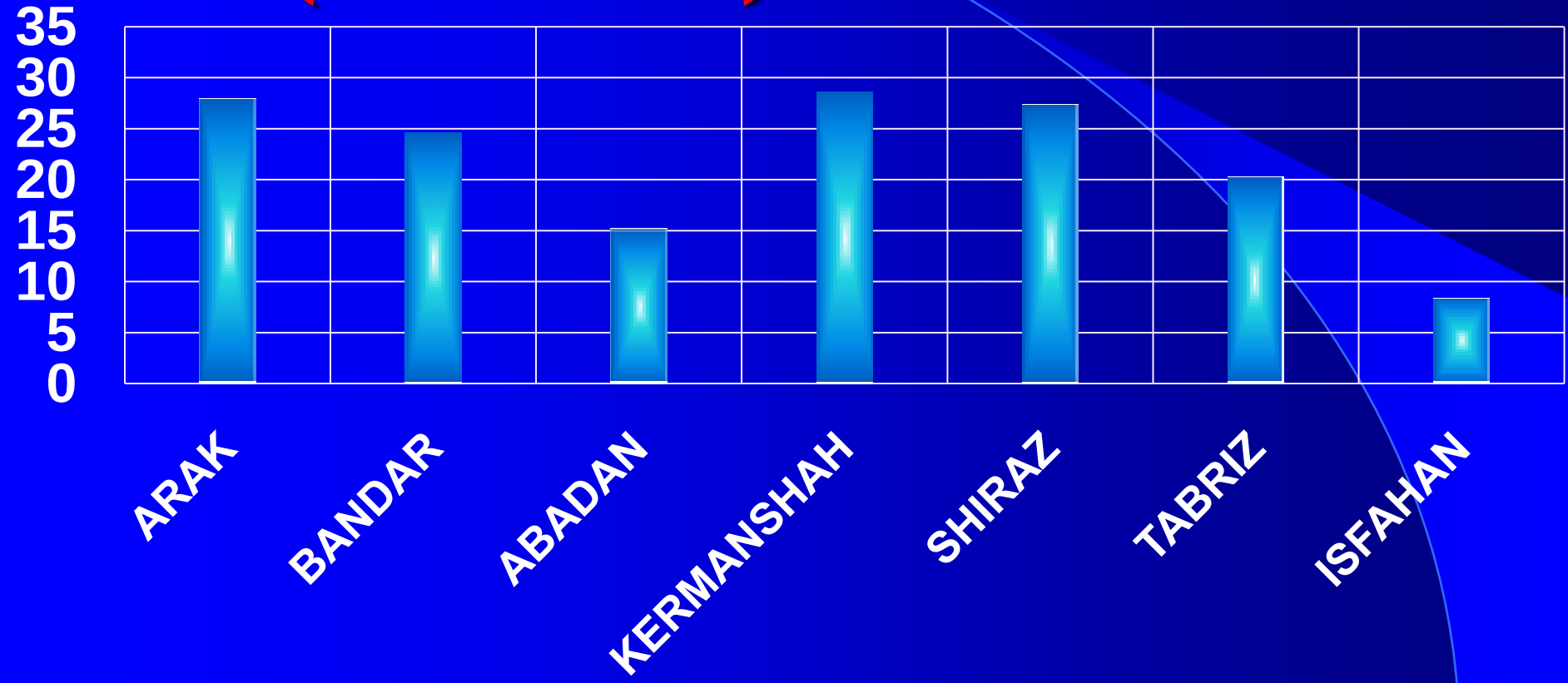
Average Refineries Availability (2011-2016)

NIORDC



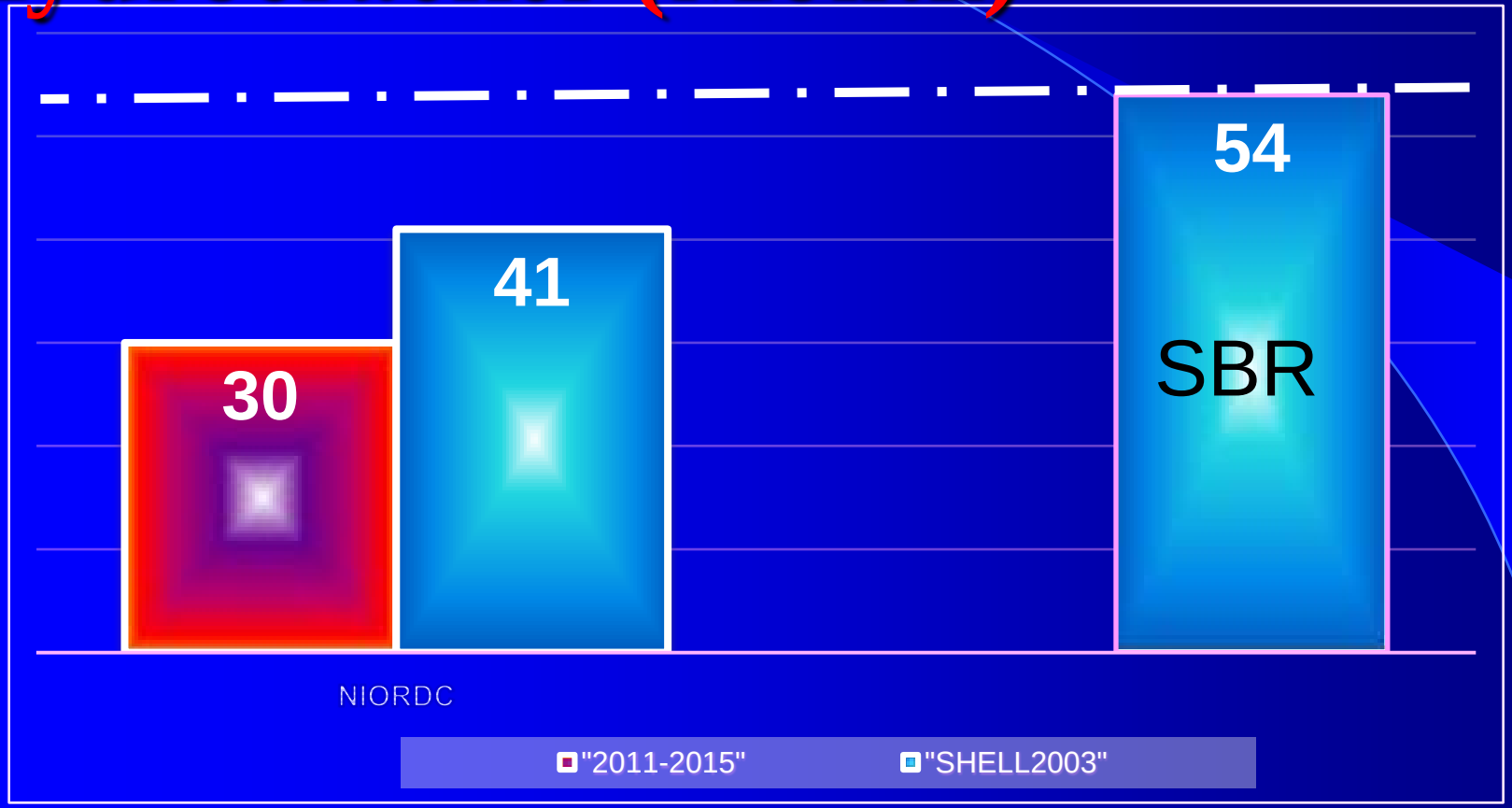
Maintenance cost/ Ton of Feed (US Cents)

NIORDC



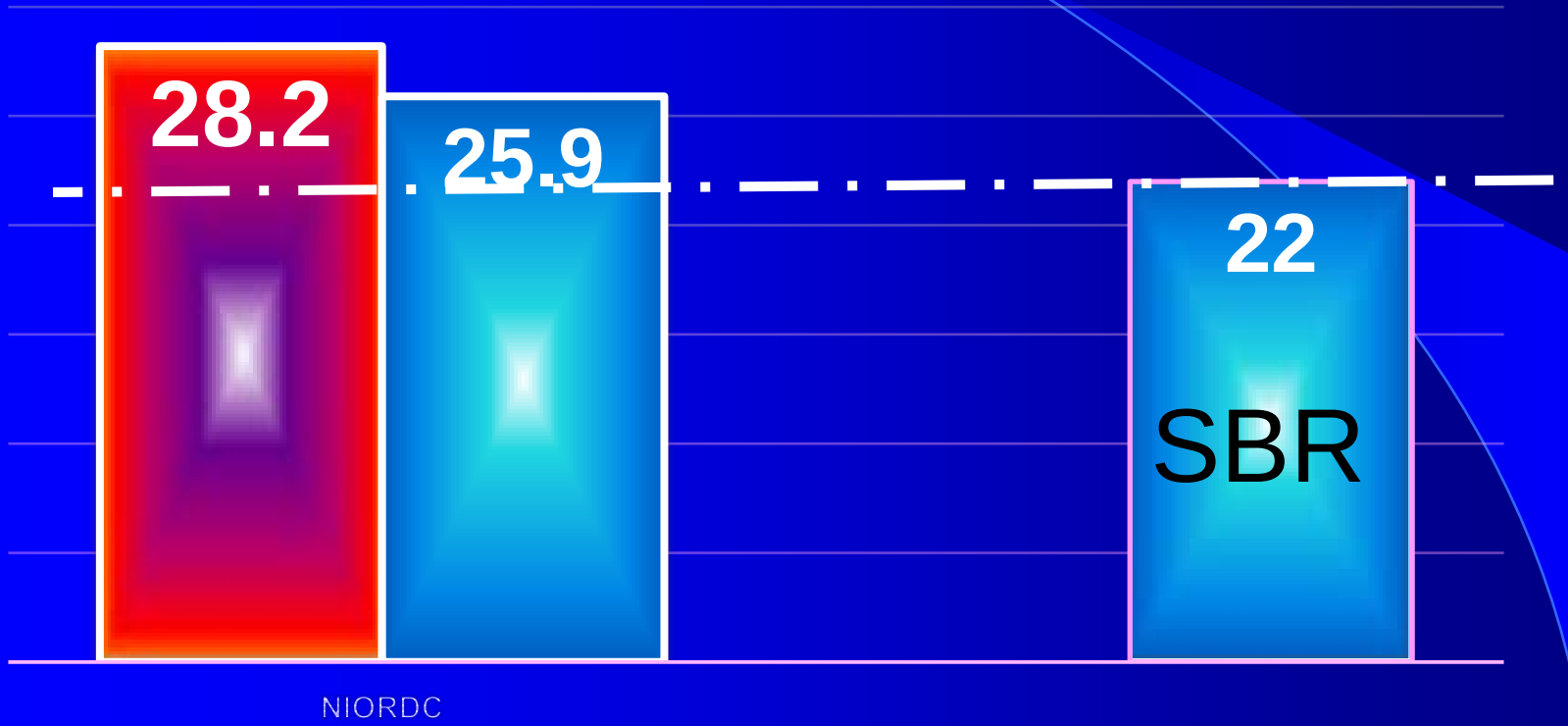
Turnaround Cycle Hydrocracker (Month)

NIORDC



Turnaround Duration Hydrocracker (Days)

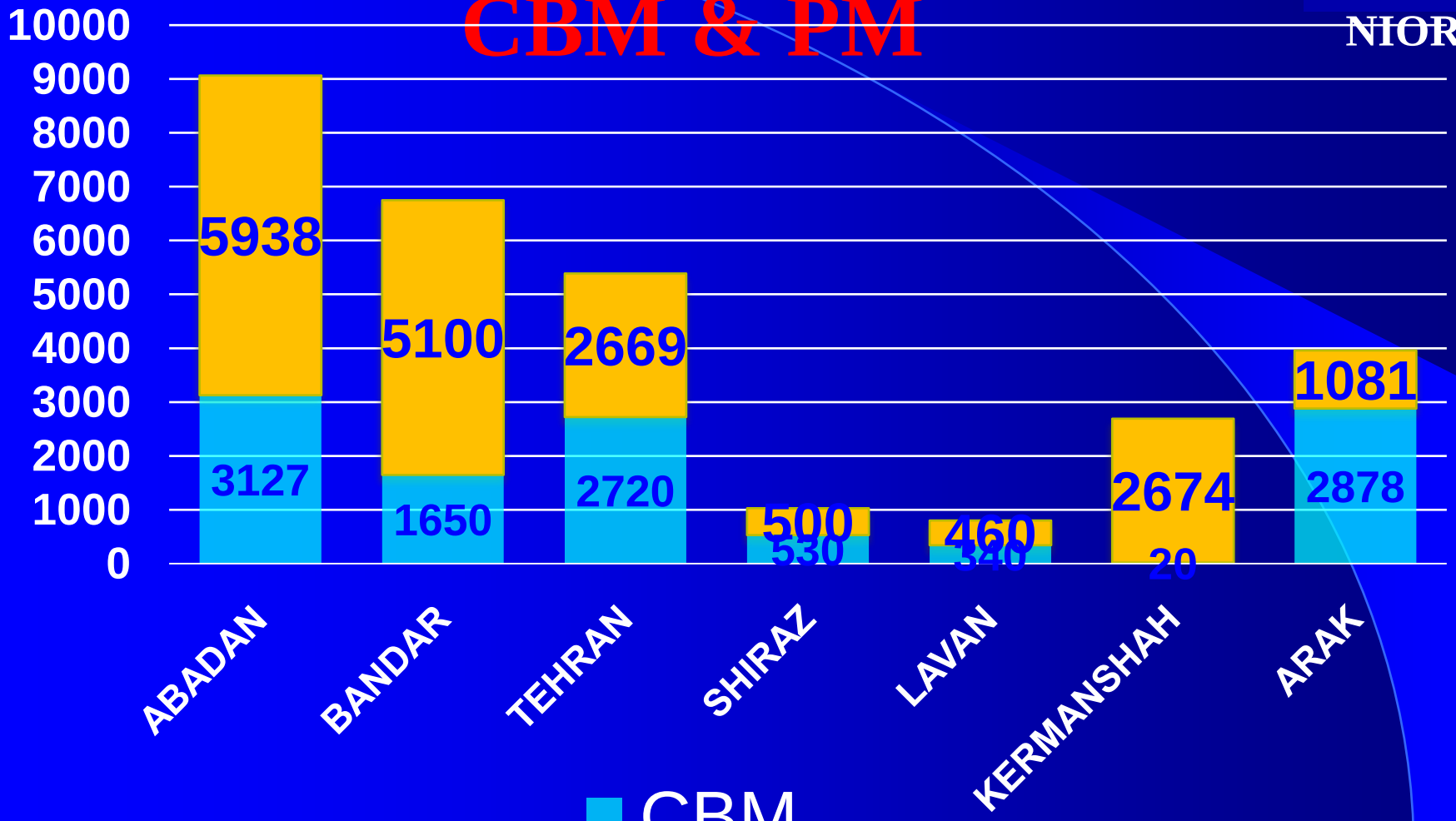
NIORDC



"one before LAST"

EQUIPMENTS COVERED BY CBM & PM

NIORDC



Domestic Catalysts

NIORDC

Refinery Catalysts	Manufacturer	Tons/Y
Methanahion	Sarv Catalyst	13
HTSC	Sarv Catalyst	60
LTSC	Sarv Catalyst	40
CCR / CRU	Sarve & Exir Novin	100
GHT-KHT-NHT	Rangineh Pars	350
Hydrogenation	Sarv Catalyst	12
ZnO	Rangineh Pars	50

Domestic Catalysts

NIORDC

Merox	Rangineh Pars	3.5
Steam Refoming	Sarv Catalyst	40
Dechlorination	Sarv Catalyst	15
Isomerization	Exir Novin	250
Activaled Alumina (SRP)	Gahar Seram	60
Tio2	Gahar Seram	30
PSA	Gahar Seram	80
Total		1093.5

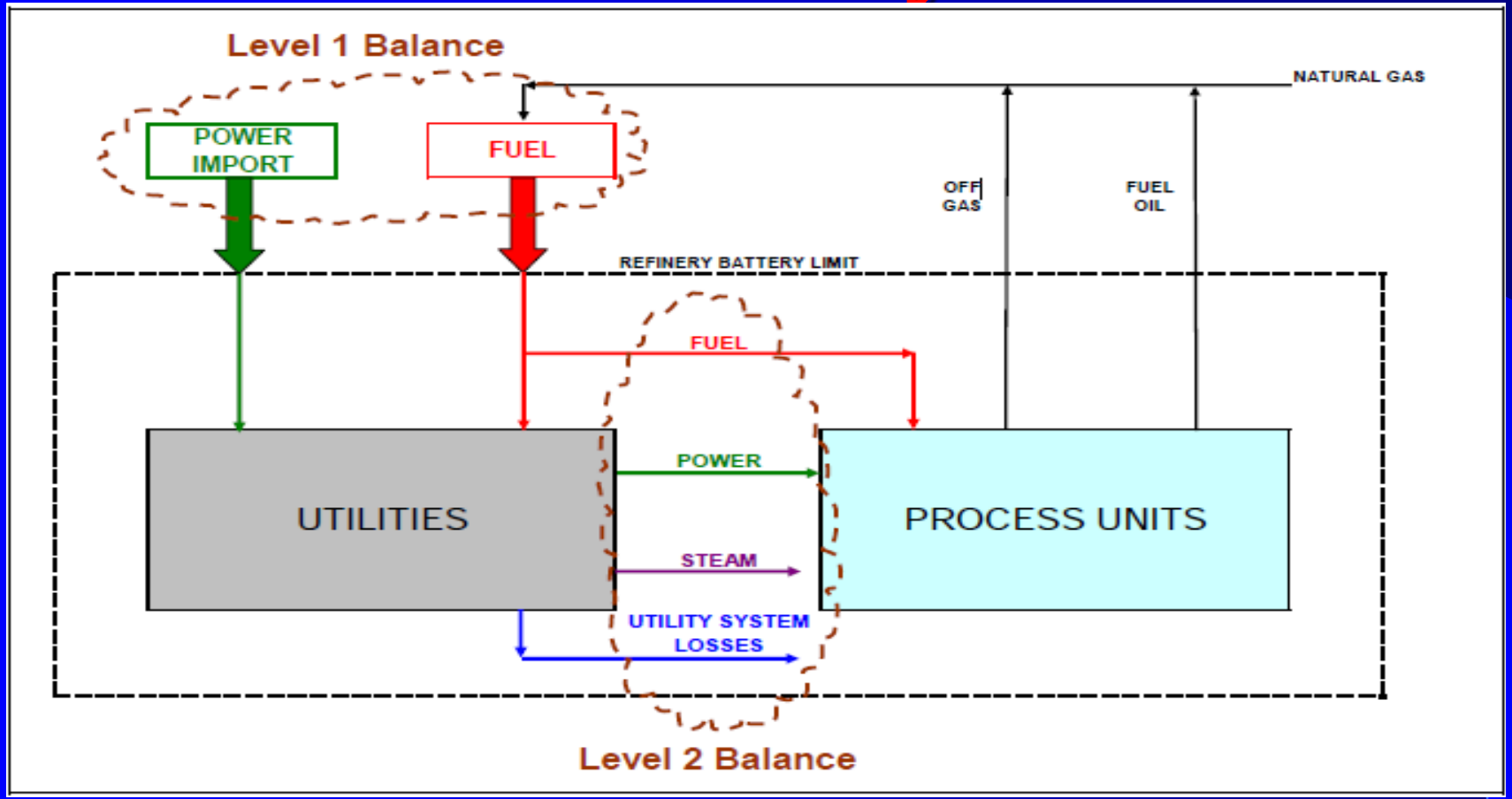
Catalysts need for Investment

NIORDC

Refinery Catalysts	Manufacturer	Tons/Y	Remarks
Hydrocracker	Iranian, Sarve & Exir Novin	130	under Pilot Test
RCD Catalyst	Albemarle, JGC C&C	1500	Imported
FCC	Mahde Taaje company	1000	Plant, under construction
RFCC	Mahde Taaje company	6000	
Total		8630	

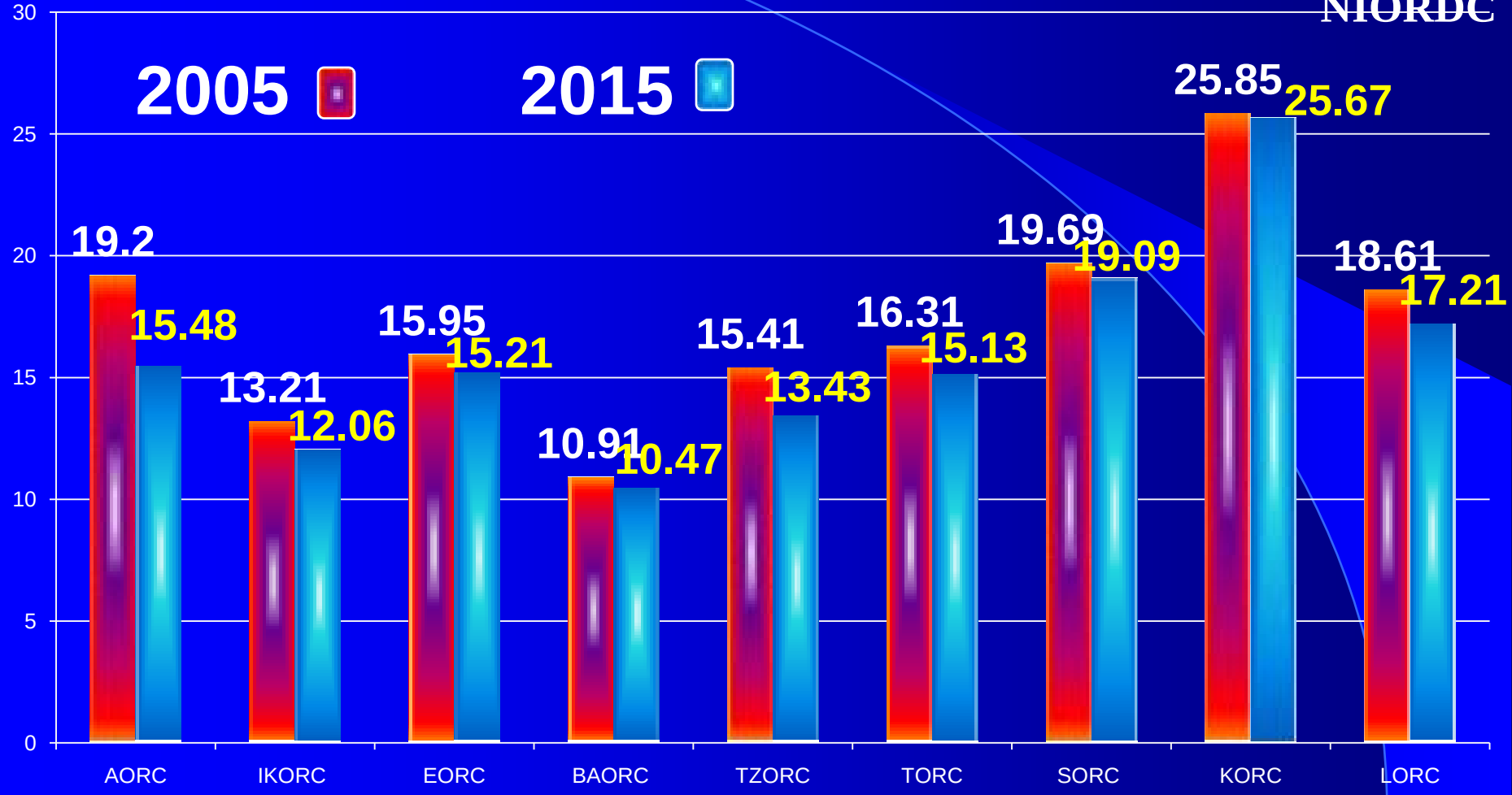
Energy Balance in a typical oil refinery

NIORDC



Refineries Energy Index

NIORDC



Fuel Consumption in 2015

NIORDC

Actual Fuel Consumption	Nm3/hr	756,094
Ideal Fuel Consumption	Nm3/hr	574,260
Deviation ,	Nm3/hr	181,834
Deviation	%	24.05
Price of the Deviation	$/Year	514,269,419
Equivalent of Crude Oil	bbl/Day	27,243

Fuel Consumption in 2015

NIOR DC

	Gcal/Year	MMbbl/Year
AORC	6,970,920	5.06
IKORC	13,086,079	9.50
EORC	13,167,142	9.56
BAORC	6,464,793	4.69
TZORC	3,965,767	2.88
TORC	8,927,912	6.48
SORC	2,320,376	1.68
KORC	612,355	0.44
LORC	1,445,790	1.05
Total	56,961,132	41

Energy Consumption in 2015

NIORDC

IRAN Energy Consumption	MMbbl/Year	2,804
IRAN Energy Consumption	GCal/Year	3,862,807,215
IRAN Refineries Energy Consumption	Kbbl/Day	0.11
Refineries Energy Consumption / Total Consumption of Country	%	1.5


Thank you