

Production Efficiency & Uptime Reliability Benchmarking



Image: courtesy of Cameron

- Operating Efficiency
- Lost Production (Volume & Value)
- Mean Time Between Incidents
- Mean Time to Recover
- Ziff Energy 'Production Reliability Index'

What is 'Best in Class' Performance?

WHAT CLIENTS SAY:

"The scope and format of the study assisted us in focusing on specific areas of improvement. The presentation of the results of the study was concise and informative and reflected considerable knowledge of operations ... As a result, we have been able to dramatically improve our operational efficiencies and lower our costs."

Vice President, Super-Major

...

"We find the Ziff Energy reports to be comprehensive, well written, and most importantly, consistently objective ... The resulting analysis is of high quality and integrity ... Without the Ziff tools, we would find it very difficult to objectively measure."

Senior VP, Canadian Major

...

"We encourage other operators to participate in Ziff Energy's multi-client benchmarking projects. Some of the benefits are:

- standardized cost data & peer field comparison*
- points to areas where we may have gaps in performance*
- the results encourage us to take a look at our operating metrics and understand the drivers and where to focus our time and efforts*
- (uptime) reliability metrics*
- automated data gathering takes effort away from staff, who are stretched these days."*

Vice President,

Large Independent Producer

...

PRODUCTION EFFICIENCY & UPTIME RELIABILITY BENCHMARKING

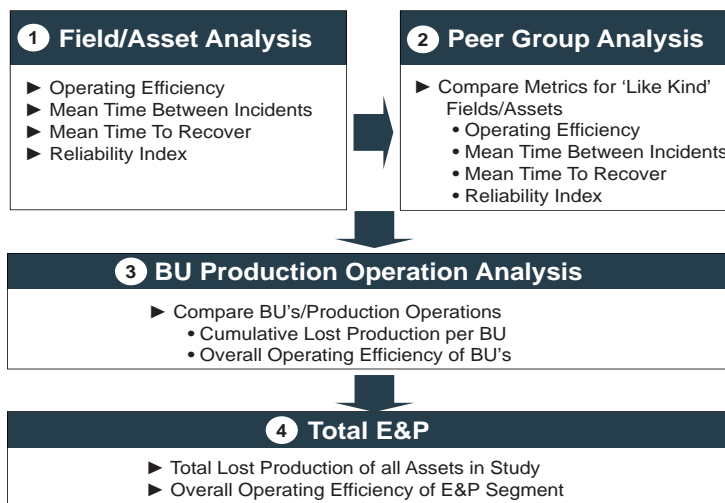
Ziff Energy assesses upstream production operations worldwide and provides **production efficiency benchmarks**. We possess Technical Data and Production Efficiency (Uptime) information for more than 600 oil and gas fields/assets and can construct customized benchmarks for your operated fields worldwide.

Ziff Energy's Production Efficiency Analysis has been implemented both Offshore and Onshore during the last 4 years by companies operating on 5 continents worldwide. Ziff Energy has successfully executed **more upstream production efficiency benchmarking projects** (over 100) than any other consultancy, and has established in its proprietary database the broadest geographic coverage for comparative productive efficiency data.

Operations Performance Benchmarking is our primary business. Ziff Energy's approach is a strong analytical tool for targeting actionable production enhancement (and unit cost reduction) opportunities. The objective of Uptime Reliability benchmarking is to measure performance relative to peer operations, thus quantifying the incentive to **improve production efficiency and enhance production.**

CUSTOMIZED PEER ASSET PRODUCTION EFFICIENCY BENCHMARKS

Ziff Energy analyzes **Reliability metrics** (e.g. uptime) for each of your **fields/assets** against similar **'like kind' fields/assets** ('peer' Asset Group) from Ziff Energy's database, based on similarity of characteristics (a well proven methodology). **Ziff Energy has already developed an approach for measuring reliability consistently across companies** (several distinct metrics), and will apply this approach to your assets.



The chart above outlines our approach. First, uptime is analyzed for each individual field, identifying downtime incidents (planned & unplanned) and lost production. Second, the family of reliability metrics are measured within Peer Groups (based initially upon Ziff Energy's "World Types" of oil & gas fields and sometimes additional field characteristics). We are committed to identifying Production Efficiency performance "gaps" relative to peer field operations, *pinpointing the assets whose performance can be enhanced*. Third, performance cross business units can be compared using the field-level benchmarking results. Lastly, you receive a total E&P 'roll-up'.

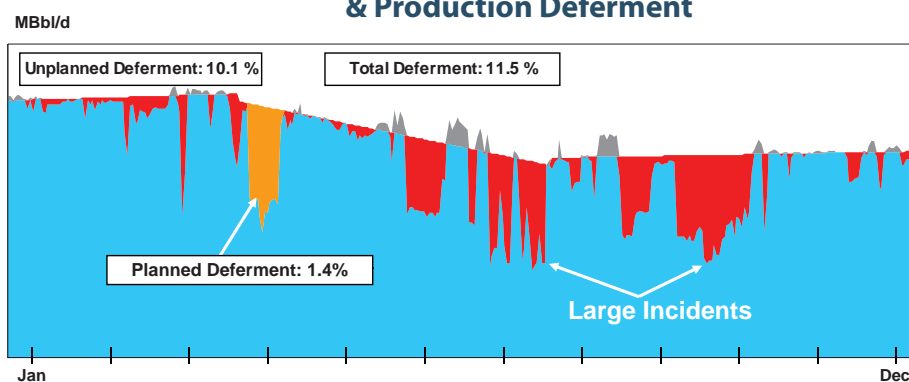
Data Period: The data gathered for Ziff Energy's Production Efficiency analysis is 12-24 months. Trend analysis is possible for fields/assets benchmarked in more than one time period to indicate if performance is improving.

UPTIME & RELIABILITY ANALYSIS: WHAT ARE WORLD “BEST IN CLASS” OPERATORS ACHIEVING?

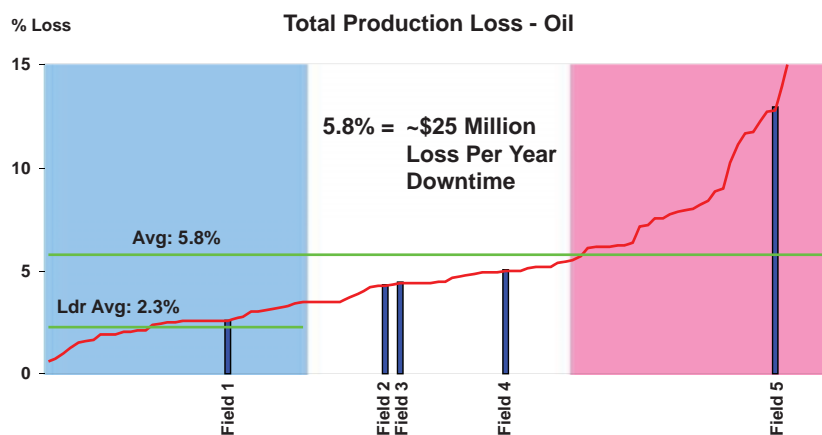
Our review of daily production identifies downtime incidents (planned & unplanned). Our operating efficiency assesses your key properties for:

- Production Reliability Index (PRI) - ratio of MTBI to MTTR, incorporating volumes deferred, provides an integrated in-depth Uptime metric/BIC target
- frequency & impact of production incidents
- duration of production incidents
- time to recover from production incidents (MTTR)
- production volume and revenue incentive associated with achieving Top Third (Leader) Uptime performance.

Sample Metrics - Planned vs. Unplanned Downtime & Production Deferment



Sample Uptime Benchmarking Study Results - Downtime Loss



STUDY DELIVERABLES

You receive:

- Customized Diagnostic Analysis - targets for each field & cost
- Customized Executive Summary
- Private Debriefings with Staff / Field Personnel
- Data Collection Support.

Our style of work is **collaborative** – i.e. we ensure a highly interactive process between our technical team with your project team. Our process measures your satisfaction at several key points, as part of our commitment to high client satisfaction.

ZIFF ENERGY RELIABILITY PROJECTS TO DATE:

- **Global Assessment** of all fields/assets for Super-Major: 20 countries/100+ assets
- **Gulf of Mexico Deepwater Improving Field Performance Multi-Client Study** (6th & 7th Editions) --- 3 dozen assets assessed
- **International FPSO Operations Multi-Client Study** (1st Edition) --- 20 vessels in 8 countries assessed
- **Western Canada Improving Field Performance Multi-Client Study** (15th & 16th Editions) 200+ assets assessed
- **Asia-Pacific Regional Operations Multi-Client Study** (1st Edition) --- 10 operators in 7 countries assessed
- Custom projects in Europe, Latin America, and the North Sea

SAMPLE RELIABILITY DATA IN ZIFF ENERGY DATABASE

WORLD OIL TYPES

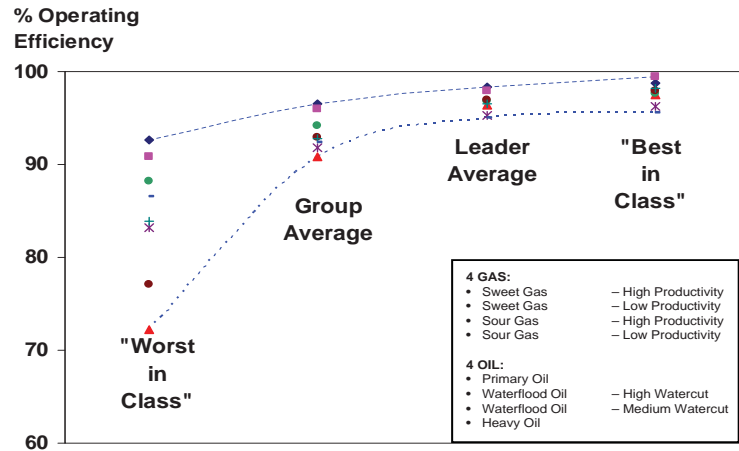
Oil Fields

Water Depth		Asset Type
Offshore	Deepwater	Fixed Platform
		TLP/SPAR
		FPSO
Offshore	Shelf	Fixed Platform
		TLP/SPAR
		FPSO
Onshore		Primary
		Waterflood
		Tertiary
		Heavy Oil

Gas Fields

	Asset Type
Offshore	Big Gas
	Mature Gas
Onshore	Deep Gas
	Medium Depth Gas
	Shallow Gas
	Sour Gas

Production Performance - 8 Types Of Operations



Source: 2009 WCSB Improving Field Performance Study results of 160 oil & gas properties

**You are invited to participate in this uniquely effective analysis
and share in the benefits**

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Why Ziff Energy?

Since 1996, Ziff Energy has completed over 160 multi-client studies, assisting 100+ E&P companies in 36 countries to improve Operations Efficiency and Reliability by comparing performance against similar gas or oil fields (to date 3,800+ oil and gas fields have been analyzed in our field operations studies). We are Upstream Professionals with 20+ years experience and have the knowledge and background to provide specific and actionable solutions. Our **'Centre for Benchmarking Excellence'** was established in 2007 to ensure Ziff Energy studies for upstream operations are the best executed through centralized control of data integrity, review & analysis, and Automated Data Gathering.

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