

Healthcare Repair & Maintenance Contracts Gas Turbine Base Case

Technical Services Required

- Scheduled and Un-Scheduled Maintenance on existing and new gas turbine packages (Base Case of 6 gas turbines)
- OEM Total Healthcare coverage and liability for gas turbine failures (guaranteed 4 weeks turn-around time at remote sites built into the Healthcare Contract)
- Transfer of Responsibility and **Financial** Risk

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Points of Consideration

- Reasons for long term Healthcare Maintenance Contract
- Reasons for single sourcing with the OEM
- OEM resources to support the Operator
- Proposed Contract framework

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Turbine Packages Covered –Base Case Example

Existing Gas Turbines in operation (OEM Supply)

- 2 x Mechanical Drive Gas Turbines in Compression Duty each rated 9.5 MW**
- 1 x Single Shaft Driven Generator Set rated 4.9 MW**

New Gas Turbines phased in expansion project (OEM Supply)

- 2 x Single Shaft Gas Turbines in Pump Duty rated 4.9 MW**
- 1 x New Single Shaft Generator Set rated 4.9 MW**

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OEM Recommended Maintenance Plan

Existing Packages

Year 1 A Annual Service and Inspection

Year 2 A

Year 3 A

Year 4 B Gas Generator Exchange

Year 5 A

Year 6 A

Year 7 A

Year 8 C Gas Generator & PT Exchange

Year 9 A

Year 10 A

Phased in New Packages

A Annual Service and Inspection

A

A

B On-site, overhaul

A

A

A

C Gas Generator & PT Exchange

* Quarterly water wash and inspection is performed by the Operator as recommended by the OEM

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Reasons for Single Sourcing

- OEM ability to support proprietary DLE technology, hardware and software (PLC Controls / ladder logic)
- Provision of OEM certified service engineers (A – Team)
 - ✓ Continuous training in latest gas turbine technology
- Genuine OEM spare parts supplied – Framework discount can be negotiated at 10%
- Privileged access to fleet of lease-pool gas turbines
 - ✓ 14 day ex-works guarantee to supply replacement core engine
- Diagnostic capability for core engine and package data through Electronic Data Exchange Network
- Services complement warranty on works completed and new packages

Healthcare Repair & Maintenance Contracts

Gas Turbine Base Case

OEM Resources To Support the Operator

- 2,300+ employees world-wide – Base Case OEM - access to a full realm of expertise: PLC Logic Programming, blade / hot gas path / burner / ECU / VGV / Package root cause failure analysis and rectification
- World-wide service centre network employing 350 field service technicians
- World-wide spare parts and lease engine storage
 - ✓ Inventory of \$70.0M spare parts
 - ✓ Lease pool of 39 Single Shaft and 33 Mechanical Drive (Base Case)
- State of the art repair and overhaul facility handling 250 units per year
- Electronic Data Exchange Network (diagnostic) link

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Proposed Healthcare Contract Framework (SOW)

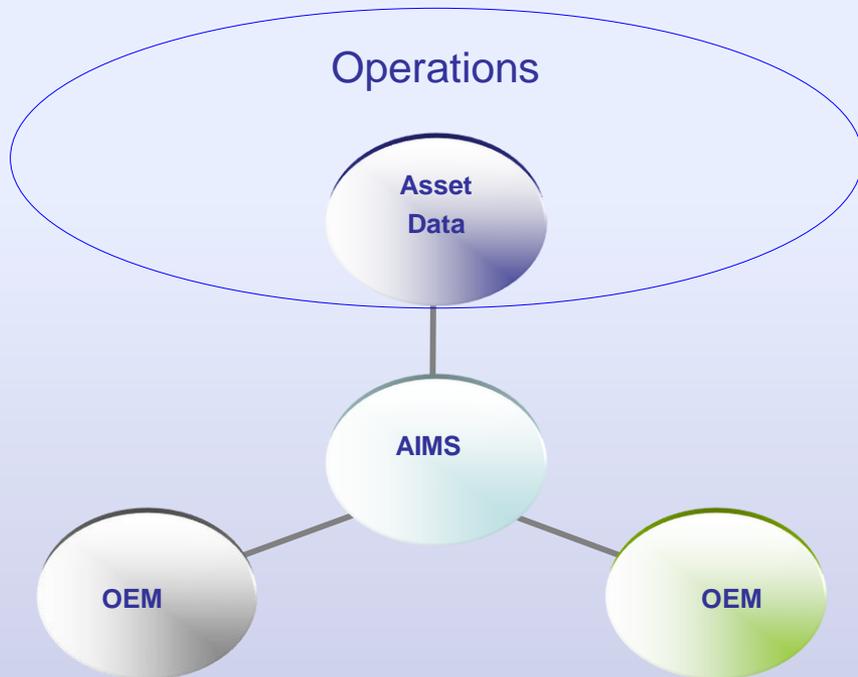
PROPOSAL TO SPLIT INTO 2 SEPARATE CONTRACTS:

SUPPLY OF MATERIALS AND SUPPLY OF MANPOWER – TOTAL HEALTH CARE

- Covers planned maintenance and breakdown maintenance for existing packages and new packages over a 10 year duration
- All spare parts including replacement gas turbines and power turbines in the event of catastrophic breakdown (Lease Pool access)
- All manpower for planned and breakdown maintenance (includes mob / demob, commissioning, installation costs)
- A dedicated site service engineer for the production season (as required)
- Guaranteed 4 weeks turnaround time for catastrophic turbine failures (OEM health care coverage and liability)
- Budgeted spend over ten + years utilizing Framework negotiated pricing at present value
- OEM to register locally for taxation purposes – Remote location for Base Case
- OEM buy-in – offer to give OEM more control thus a win-win situation

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Proposed Healthcare Contract Framework (SOW)



Asset Data:

Equipment performance data (condition monitoring / field data) provided to AIMS Contract Coordinator by Production / Maintenance Operations (requires Operations interface)

AIMS:

Contract and Technical Coordinator to ensure compliance with provisions to the Healthcare Contract. All coordination / logistics / changes are managed from cradle to grave

OEM:

Individual OEM's for respective equipment are responsible to supply manpower and materials within Contract Terms

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Commercial and Technical Controls

- Management of Contract within the SOW frame for assets
- Management of Change for hardware and software including all PLC logic changes
- Tracking and logistics of materials and manpower
- Monthly accrual of Contract spend
- Financial analysis of Contract duration (NPV calculation)
- Material / spare parts consumption
- Annual reconciliation meeting with the OEM (risk and reward mechanisms, preventative maintenance / scope challenge)

Healthcare Repair & Maintenance Contracts

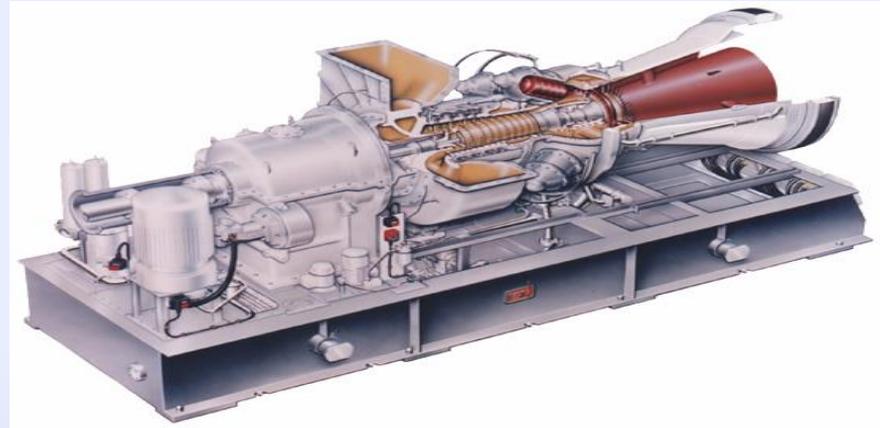
Gas Turbine Base Case

Scope Covered:

- Gas Turbine, Power Turbine
- OEM Supplied Gearbox
- Fuel System
- Lube Oil System

Including:-

- ✓ All on skid equipment
- ✓ Off skid breathers
 - ✓ Flametraps
- Turbine Control System
 - Including:-
 - ✓ Gas turbine control panels
- ✓ Fire & Gas System
 - ✓ Vibration equipment



•Package

Including:-

- ✓ Start System
- ✓ Battery Charger / Inverter
- ✓ All on Skid Piping, Cabling
- ✓ Fire & Gas

•Manpower

Including:-

- ✓ Full Time On Site Service Engineer
- ✓ 2 Service Engineers per Inspection
- ✓ 4 Service Engineers per
Unscheduled Maintenance

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Options

- **Level 1 Scope: Scheduled Maintenance - Own Risk of Catastrophic Failure**
 - Parts for Scheduled Maintenance
 - Manpower for Scheduled Maintenance
 - Travel & Accommodation Expenses
 - Exchange Cores at Major Inspections
 - Basic Tool Kit to be purchased
- **Level 2 Scope: Total Health Care - Covered Risk***
 - As Level One
 - Parts for Un-scheduled Maintenance
 - Manpower for Un-scheduled Maintenance
 - Emergency call out service
 - 24 Hour 7 Day helpdesk
 - On-site stockholding
 - Responsibility for all software upgrades or PLC changes
 - Exchange Gas Generator & Power Turbines in the event of major failure
 - Guaranteed availability of gas turbine assemblies
 - On-Site Service Engineer (Baby Sitting)
 - Guaranteed response times

* Assured Maintenance when you have already reached high reliability of 97%

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Pricing Strategy: Start With Benchmark Pricing

OEM LIST PRICING (Ea Unit ex works)

Class A Materials

Single Shaft Genset \$ 95 kUSD

Mech. Drive Turbine \$ 170 kUSD

Class B Materials

Single Shaft Genset \$ 880 kUSD

Mech. Drive Turbine \$ 1.8 MUSD

Class C Materials

Single Shaft Genset \$ 1.4 MUSD

Mech. Drive Turbine \$ 2.2 MUSD

OPERATOR PRICING AGREEMENT

Class A Materials

\$ +10% Discount

\$ +10% Discount

Class B Materials

\$ +10% Discount

\$ +10% Discount

Class C Materials

\$ +10% Discount

\$ +10% Discount

Program Savings = \$ 10% Cumulative or more

* Includes all materials including spares, core engines

Price discounts are negotiated as part of the Healthcare Contract

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Cost Benefit – Base Case (Preliminary Estimate)

OEM Std Materials List Price for same scope (based on year 2000 pricing):

Call Off Materials List Based Pricing: \$14,458,000

Operator Healthcare Contract (based on year 2000 pricing):

Negotiated Materials Supply Pricing: \$12,500,000

- The materials for the Healthcare Contract includes:
 - ✓ All scheduled and un-scheduled spares
 - ✓ All consumables
 - ✓ One Spare Core Engine held in storage at Operator site location

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Manpower Costs Based On Predicted Operation For 10 Years

Current OEM Call Off Rate \$230.00 per hour \$2760 per day

Travel and accommodations are expensed

Operator Healthcare Contract \$95.00 per hour \$1140 per day

And includes

- ✓ All travel and accommodation
- ✓ Safety Training for technicians

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Benchmarking Against Predicted Running Hours
Manpower and Materials For Ten Years

	Total Price	\$ per Hour	\$ per KW Hour
OEM List	\$21.6M	66	0.0110
Operator	\$18.4M	56	0.0090

Assumptions

- Assumed running hours = 324,000
- Assumed Kw Hrs = 1,960 (10 power 6)

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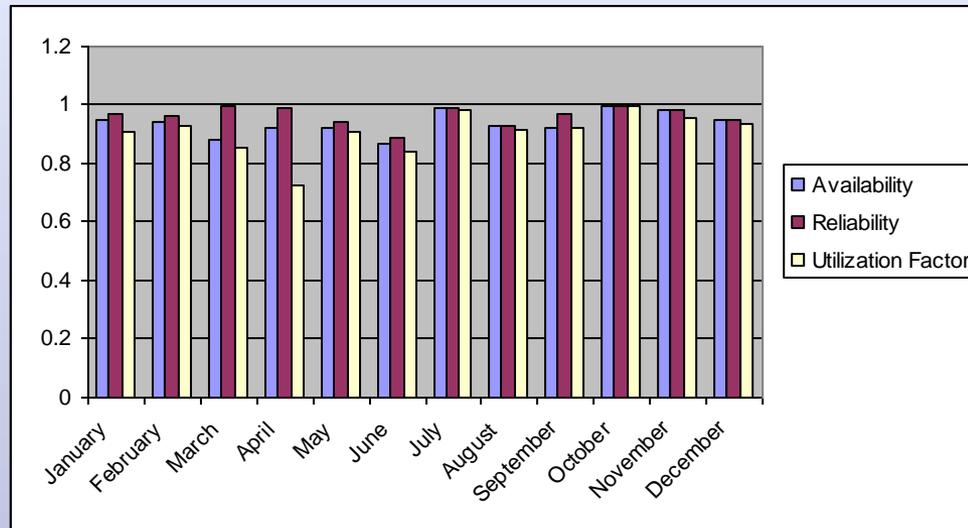
Performance and Results

Base Case – Power Generation Turbine:

Month 0: Reliability and Availability = 25%

Month 18: Reliability and Availability = 95%

Calculated Availability, Reliability and UF after 18 months of Healthcare Contract Provision
(calculation based on last 12 months recorded data)

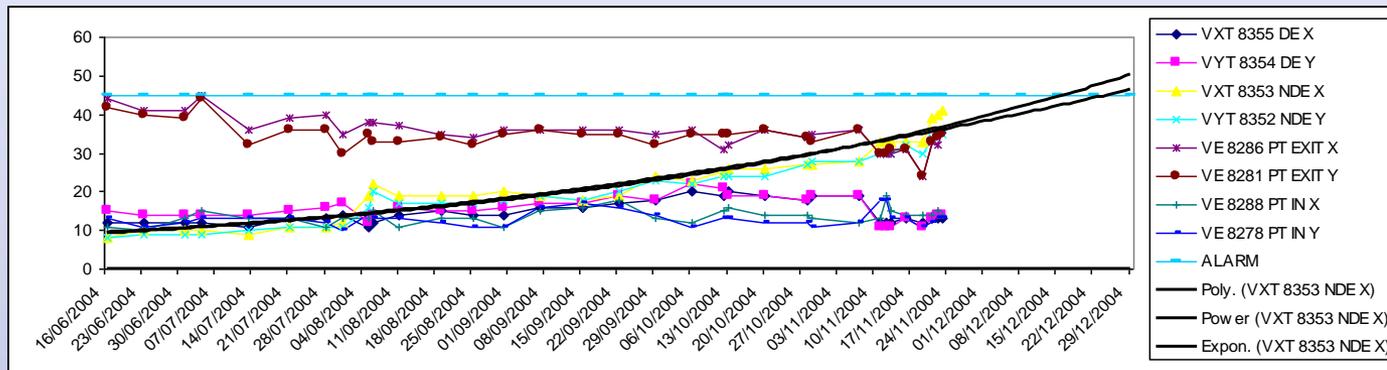


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Performance and Results

Base Case – Power Generation Turbine:

- Effective response using the benefits of the Healthcare provision
- Regular condition monitoring and trending as monitored by the OEM site FSR
- Analysis: Over the period of one year, the curve below shows increased vibration levels on the NDE bearings for the Power Generation Turbine – corrective maintenance required



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Healthcare Maintenance Management Contract

Benefits Level One versus Level Two

- ✓ Fixed OPEX - Opportunities to stretch maintenance schedule and reduce OPEX
- ✓ Minimized downtimes to the Operator
- ✓ Risk of catastrophic turbine failure covered
- ✓ Minimized administration
- ✓ Dedicated single point contact
- ✓ Continuous diagnostic capabilities (site service engineer - FSR)
- ✓ All around availability for needed expertise (PLC logic programming upgrades)
- ✓ Short turn-around times in case of catastrophic failure
- ✓ Emergency Call-Out Service (guaranteed response times)
- ✓ Get away from the weeds and reallocate technical resources

Healthcare Repair & Maintenance Contracts Maximizing Production by Improving Maintenance

Healthcare Maintenance Management Contract

- Level Two is a long term Assured Maintenance Management Approach
- Plan extended to:
 - ✓ All Rotating Equipment with high failure / maintenance requirements (eg. Pump / Compressor seals, anti-surge compressor controls, ancillary package, alternators, reciprocating equipment)
 - ✓ DCS, PLC Controls, instrumentation (PSV compliance, field buss, transmitters, HC metering, safeguarding, etc.)
 - ✓ Switchgear, MCC, Power Limit Boards, Transformer maintenance
 - ✓ Subsea trees, controls
 - ✓ Common manufacturer of valves
 - ✓ HVAC, Waste Heat Recovery
 - ✓ Pipeline (pigging / monitoring) and piping systems
 - ✓ Lifesaving Systems: F&G, lifeboats, deluge, SCBA, CO2
 - ✓ Offshore Cranes