



BP standards in instruments and automation

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Strategy for use of engineering standards



- In-house standards are based on conformity with relevant international and industry standards. Two ways:
 - Add to, delete, or amplify the reference standard
 - Specific references in referenced standards apply
- Known as Engineering Technical Practices (ETP)
- Globally applicable across BP in all segments
- Enforcement is through the (mandatory) Integrity Management standard
- Requires projects and operations to conform with standards and practices consistent with ETPs but Engineering Authorities may authorise deviations
- IM standard was issued January 2006
- Previously ETPs were for reference. Projects selected which ones they would use for design and Operations for maintenance
- Transition period for projects and operations till end 2009 for “significant risk” ETPs and end 2011 for all others
- Participate selectively in international and industry standard work

ETPs



- Address whole lifecycle - engineering design, construction, installation, commissioning, operation and maintenance
- Two principal types of document:
 - Guidance on Practice (**GP**) address design and equipment selection, for use by engineering contractors
 - Guidance on Industry Standard (**GIS**) address equipment specification, used by engineering contractors and may be issued to vendors
 - Also Guidance Notes (GN), Reference Documents (RD) and Data Sheets (DS)
- Been developed as ETP project over 2001-2006 based on heritage company in-house standards, practices and specifications (BP, Amoco, Arco, Castrol) and updated for developments in international and industry standards
- Instrument and Control first “category” to be developed. Issued 2002 and 2003

ETP development



- Technical content of each category managed by subject matter expert (SME) team of 4-7 experts representing
 - Segments - E&P, R&M, Chemicals
 - Geography - N America and Europe
 - Heritage companies – BP, Amoco
- ETPs administered by small team in Houston reporting to Head of Standards (Ross Smith) in London
 - Manage ETP Library on the intranet. Contractors allowed access through extranet
 - Own ETP format and style
 - Manage technical editors
- SME teams:
 - Agree need for documents and technical content
 - Manage document development by consultants
 - Review comments and validate “shared learnings”
 - Decide when updates required

ETP categories



00 Administration	32 Inspection & Testing	59 Telecommunications
02 Casing, Tubing & Drillpipe	34 Rotating Equipment	60 Utilities
04 Civil & Geotechnics	35 Maintenance & Reliability	62 Valves
06 Corrosion	36 Materials Selection	64 Measurement
10 Drilling Equipment	38 Mechanical Handling	66 Offshore Structures
11 Well Fluids and Cements	40 Packaged Equipment	68 Overhauls
12 Electrical	42 Piping	70 Procurement
13 Engineering Documentation	43 Pipelines	72 Refractory
14 Environmental & Noise	44 Plant Layout & Design	74 Reuse of Equipment
18 Fabrication & Welding	46 Pressure Vessels	76 Safety and Loss
22 Fired Heaters	47 Process Design	78 Subsea Equipment
24 Fire Protection	48 Processes & Procedures	80 Wellheads & Christmas Trees
26 Heat Exchangers	50 Quality & Conformity Assm't	82 Lubricants
28 Hoses	52 Insulation	90 LNG Philosophies
30 Instruments & Control	56 Steam Plant	98 Value Improving Practices
31 Analysers	58 Storage Tanks	99 Project Management

Instrument & Control ETPs



<u>GP 30-01</u> Temperature instruments	GP 30-49 Control system documentation
GP 30-05 Pressure instruments	GIS 30-491 Procurement of control systems
GIS 30-051 Pressure gauges	GP 30-50 Advanced control applications
GP 30-10 Non-fiscal flow instruments	GP 30-55 Control rooms
GP 30-15 Level instruments	GP 30-60 Process control networks
GP 30-20 Miscellaneous field instruments	GP 30-65 Control panels
GP 30-25 Field instruments - general	GP 30-66 Wellhead control panels
GP 30-30 Field communication buses	GP 30-70 C&I in vendor packaged equipment
GP 30-35 Control valves & pressure regulators	<u>GP 30-75</u> SIS – Mangement of safety lifecycle
GP 30-40 Process automation systems	GP 30-76 SIS – Developm't requirem'ts spec
GIS 30-401 Process automation systems	GP 30-80 SIS – Implement requirem'ts spec
GIS 30-402 Programmable logic controllers	<u>GIS 30-801</u> SIS – Design & eng'g logic solvers
GP 30-41 Data historian systems	GP 30-81 SIS – Operations and maintenance
GIS 30-411 Data historian systems	GP 30-85 Fire and gas detection
GP 30-45 Human machine interface	GIS 30-851 Fire and gas detection
GIS 30-451 Human machine interface	GP 30-90 Commissioning I&C systems
	GP 30-95 Control loop tuning

Analysers, Telecomms, Measurement



GP 31-01 Analyser systems	GP 59-03 Voice, video & data integration
GIS 31-011 Analyser houses	GP 59-05 Facility netw'k segment'n & security
GIS 31-012 Analyser sample systems	GP 59-07 Network and system availability
GIS 31-013 Gas chromatography analyser	GP 59-20 Drilling rig telecomms
GIS 31-014 Physical property analysers	GP 59-30 Inter-facility connectivity selection
GP 31-02 Analyser validation	GP 59-35 Fibre optic cable offshore
GP 31-04 Analyser house entry procedures	GP 59-40 Wireless inter-facility selection
	GP 59-60 LAN design
	GP 59-62 Structured horizontal cable system
	GIS 59-621 Horizontal cabling materials sel'n
GP 64-00 Measurement management	GP 59-63 Fibre cable plant design
GP 64-01 Fluid measurement management	GIS 59-631 Fibre optic materials
GP 64-02 Dynamic measurement	GP 59-72 UHF two way radio design
GP 64-03 Static fluid measurement systems	GP 59-80 Long range voice radio comms sel'n
GP 64-04 Fluid quality measurement systems	GP 59-82 Public address and general alarm
	GP 59-90 Satellite phone selection

Other relevant ETPs



GP 12-15 Wire and cable	GP 78-01 Subsea prod'n control systems
GP 12-25 Earthing and grounding	GP 78-09 Subsea HIPPS (to be developed)
	GP 78-10 Subsea connectors & cable assemblies
GP 43-37 Pipeline control systems	GP 78-20 Subsea control fluid selection
GP 44-60 Area classification API RP 500	
GP 44-65 Area classification IP15	Philosophy documents:
GP 44-70 Overpressure protection systems	GP 81-11 LNG Information & control systems
GP 44-80 Relief disposal systems	GP 81-31 LNG ESD and depressuring systems
	GP 81-33 LNG safety instrumented systems
GP 48-03 Layer of protection analysis	GP 81-35 LNG process control systems
	GP 81-37 LNG Instruments & analytical systems
GP 62-04 Relief valves	GP 81-41 LNG Overpress prot'n, flare & vent sys
GIS 62-041 Relief valves	

Additions to I&A standards on OGP draft list



Not listed all standards referred to in BP ETPs

- EEMUA 189 A guide to Fieldbus application to the process industry
- EEMUA 191 Alarm systems - a guide to design, management and procurement
- EEMUA 201 Process plant control desks using human-computer interfaces – a guide to design, operational and human interface issues
- ASME PTC 19.3 Temperature measurement. Contains guidance on selection of thermowells to avoid fatigue failure due to wakes

Updates to OGP draft list:

- 6 UKOOA “Guidelines for Instrument-based Protective Systems” will be replaced in 2007 by a new UKOOA/EEMUA/EIC document “Guide to the application of IEC 61511 to safety instrumented systems in the UK process industries”
- 7.6 ISA TR84.00.04 was issued in December 2005 (is correct in 7.7)