

Ballot	6330	Name	API 670, 6th Edition			Report Date:	3/23/2024	Closing Date	5/5/2024	
		Proposal	This ballot is on the proposed API Std 670, 6th Edition, Machinery Protection Systems. Be sure to examine the document carefully and thoroughly, also checking for accuracy with any cited references, cross references, descriptions, terminology, and values.							
Sort Key	Name	Vote	Clause Subclause Number	Paragraph	Type of Comments	Comments	Proposed Change	Comment Resolution	Attachment	Company
5	Richard Dow	AffirmativeWith Comment	2	2	General	References are missing 619 and 677.	TF to considr including.	Not Accepted - No references to these standards		
1	R. Daryl Taylor	AffirmativeWith Comment	2	2.1	General	API 613 and Schneider Electric PI-MBUS-300 are not used in the document. API 611, 616, 617, 618, 684 appear to be used informatively only	Review the entire Normative Reference list to be sure the references are used and that they are used normatively	Accepted. API editors will screen for normative references.		
4	Mantosh BHATTACHARYA	NonVoter	2	2.1	General	Kindly add the revision / edition detail for API standards. API RP 684 has been replaced by API TR 684	ADD revision / edition number such API 617 9th edition	Accepted		Petrofac
8	Bob Eisenmann	AffirmativeWith Comment	2.1	2.1	General	Schneider Electric PI-MBUS-300,13 Modbus® Protocol Reference Guide: This seems more suitable in the bibliography. I don't see how this is normative.		Accepted		BP America, Inc
2	Bob Eisenmann	AffirmativeWith Comment	2	2.2	General	No specific standard is given.	Specific normative references are required if there are any.	Accepted in Principle. 2.2 will be deleted and normative references will be added.		BP America, Inc
6	Richard Dow	AffirmativeWith Comment	2.1	2.1	General	Missing references to 619 and 677.	TF to consider adding in.	Not Accepted - No references to these standards		
7	Bob Eisenmann	AffirmativeWith Comment	2.1	2.1	General	API 684 is listed as a normative reference. Today's version is a technical report and not a recommended practice. In itself it is not-normative, but it does contain special paragraphs that have normtive language. This reference has a different title from the one I have, which is 'API Standard ParagraphsRotordynamic Tutorial: Lateral CriticalSpeeds, Unbalance Response,Stability, Train Torsionals, and RotorBalancing'	Update reference and consider whether this should or can be a normative reference.	Accepted		BP America, Inc
3	Bob Eisenmann	AffirmativeWith Comment	2	2.4	General	This seems out of place.		Accepted. 2.3 has been deleted		BP America, Inc
11	Bob Eisenmann	AffirmativeWith Comment	3	3.1.13	General	The definintion for best fit straight line is not typical. Usually, this is taken as a regression line that minimizes the sum of the squres of the residuals.While this can be done, computationally, it is more difficult. Standard statistical tools and spreadsheets can perform the regression fit, even calculators.	Change the definintion to what is commonly recognized as a best fit line.Usually, the wod straight is omitted, too.	Accepted in Principle. Task force will update paragraphs		BP America, Inc
12	Bob Eisenmann	AffirmativeWith Comment	3	3.1.39	General	The definition for finite life says that components are designed to fail under normal operating ,and ... There may be some equipment that is designed to fail in normal operating conditions, this does not seem to be the normal case.	Perhaps a better defintion would say the expeced lifespan or functioningof the component is limited or bounded omstead of designed to fail. The balance of the definition on obsolesence seems reasonable.	Accepted. Definition has been revised.		BP America, Inc

13	Bob Eisenmann	AffirmativeWith Comment	3	3.1.42	Technical	The acceleration of gravity in U.S. customary units is given as 386.4 ips. To one decimal place this should be 386.1. Since this is used for measurement and calibration in a MPS this should be changed. While this value is commonly seen, it is not accurate.	Update the U.S.C value to 386.1 in./s ² .The value is close to 386.0886 in/s ² , not 386.4.	Accepted. Definition has been revised.		BP America, Inc
14	Bob Eisenmann	AffirmativeWith Comment	3	3.1.62	Editorial	Definition for overall. It would be better to define overall vibration or overall signal, because the document uses the term overall for different meanings and in various contexts.	Define overall vibration or signal instead of overall.	Accepted. Updated to show overall vibration		BP America, Inc
20	Bob Eisenmann	AffirmativeWith Comment	6	6.10.3 6.10.4 b)	General	6.10.3 appears to desire synchronization to the master clock--language could be clearer if this is the intent. 6.10.4 b) wants to be able to set the internal clock through the digital communications port. This seems like a logical conflict.	Ensure the logical agreement between clauses 6.10.3 and 6.10.4.	Not Accepted. 6.10.3 explains what the internal clock shall be synchronized, 6.10.4.b) defines the capability for remote digital sync.		BP America, Inc
71	Brian Howard	NonVoter	6	6.10.6	Editorial	This could be confusing to many people. The Alarm time delay is used for determining if a measurement has exceeded a setpoint for a determined amount of time. Later in the document the time delay for the persistence of a measurement is specified to be between 1 and 3 seconds to determine an alarm state. The statement as it stands says the alarm detection should not exceed 100 ms. See suggested change for more information.	d) With exception of electronic overspeed detection (see Note 1), the time required to detect that a measurement has exceeded an alarm or a shutdown setpoint shall not exceed 100 ms. Alarm determination and a resulting relay actuation and the machinery protection system's annunciation of the condition shall be fixed by the time delay specified in 7.1.1.6 a).	Accepted in Principle. Updated paragraph		Bently Nevada Corporation
21	Bob Eisenmann	AffirmativeWith Comment	6	6.10.6 d)	General	100 ms time to detect and initiate shutdownNote 1 is added but not part of the requirement. Are there intended limitations, such as for axial position, where the time constant will affect the ability to detect and initiate a shutdown?	Review and clarify the requirement as necessary. Also, provide a realistic requirement for axial position and all shutdowns for timing from the adverse event.	Not Accepted. No proposal submitted. Standard as-written is sufficient.		BP America, Inc
43	Brian Howard	NonVoter	6	6.10.6.h)	General	Bypass of channels may lead to a complete bypass of a critical protective function	If specified, a tamperproof means for bypassing the shutdown function (except for ODS) and a visible indicator shall be provided for each channel (bypass functions subject to OEM approval)	Not Accepted. Exception can be called if wanted.		Bently Nevada Corporation
42	Brian Howard	NonVoter	6	6.11.4	Technical	Depending on MPS vendor, some relays options are not available	If specified, either of the following relay types may be provided in lieu of epoxy-sealed relays (via interposing relay, if needed)	Not Accepted. Can take exception if needed.		Bently Nevada Corporation
41	Brian Howard	NonVoter	6	6.11.6	Technical	Simplified version of statement included in par 4.12.5 of 5th edition, that was also including a note related to SIF (... except for overspeed channels and/or functional safety requirements that preclude the use of energize-to-shutdown relays.)	If specified, the relay control circuit shall be field changeable to be either normally de-energized or normally energized (except for ODS or functional safety requirements that may preclude the use of energize-to-shutdown relays).	Not Accepted. Justification not required in standard.		Bently Nevada Corporation

47	Brian Howard	NonVoter	6	6.11.8	Technical	for some rotating equipment (eg. aeroderivative engines) alarms and shutdown aren't latched since other high vibration avoidance logics (step to a low core speed) is best suited to clear the high vibrations. A shutdown from a SIS is generated if the vibrations don't get back to acceptable values.	Shutdown, alarm, and circuit-fault relays shall be field changeable to latching (manual reset) or nonlatching (automatic reset). Latching shall be standard except for aeroderivative engines where a fast deceleration to low speeds can be made to bring the vibration levels down to OEM acceptable levels A delayed shutdown from a SIS shall be provided if the high vibrations persist.	Not Accepted. Too specific to one equipment type.		Bently Nevada Corporation
73	Mantosh BHATTACHARYA	NonVoter	6.13	6.13.1 (g)	Technical	add after - 6.13.1 (g) as 6.13.1 (e) - Effect of 2-way radio (walkie talkie) near the machinery	-2-way radio (walkie talkie) near the equipment and switch from listen to talk mode, there may be vibration spike and the unit shall trips as a result. This is a repetitive effect. 2 way radio set , operation mode and prohibitive distance should be advised by Sensor supplier	Not Accepted.		Petrofac
53	Bill Robichaux	AffirmativeWith Comment	6	6.13.2.1	Technical	include requirement for external supports of conduit to be considered rigid against movement to prevent damage in the field.	Add c) the conduit shall be supported rigidly prevent damage from excessive movement, shaking, vibration, physical contact and/or other extreme conditions to prevent damage to the conduit or signalling wire in field applications.	Not Accepted. Comment too vague.		Shell
22	Bob Eisenmann	AffirmativeWith Comment	6	6.15.4	General	The event list should be accessible to the user. The way this is written there could be no access to this list, except perhaps by the manufacturer for their legal protection.	Add c) requiring this list be available to the user.	Not Accepted.		BP America, Inc
61	R. Daryl Taylor	AffirmativeWith Comment	6	6.16	Technical	MPS equipment should be field proven. Reliability clauses from Std Paragraphs should be included.	Include 6.1.1.1; 6.1.1.2; 6.1.1.3; 6.1.4; 6.1.4.1 from APISPR2024.	Not Accepted. 6.16.2 provide sufficient coverage		
62	R. Daryl Taylor	AffirmativeWith Comment	6	6.17.1	Technical	"and shall be chemically resistant as specified in 6.4" seems odd here. The sentence describes the parts of the system, not system requirements. As stated, chemical resistance is covered in 6.4 and does not need to be repeated or referenced here.	Delete the phrase "and shall be chemical resistant as specified in 6.4".	Accepted.		
23	Bob Eisenmann	AffirmativeWith Comment	6	<u>6.17.1.1.1</u>	<u>General</u>	<u>approximately 25 mm (1 in.) in length. This is not measurable, not can one be certain what will be supplied.</u>	<u>Provide a requirement for length with a tolerance that is both measurable and practical.</u>	<u>Not Accepted. As-written to avoid excluding some OEMs.</u>		BP America, Inc
63	R. Daryl Taylor	AffirmativeWith Comment	6	6.17.1.3	Technical	What about extension cables for 5 mm probes?	Include requirements for 5mm probes	Accepted.		
64	R. Daryl Taylor	AffirmativeWith Comment	6	6.17.1.5	Technical	What about oscillator-demodulators for 5mm probes?	Include requirements for 5mm probes	Accepted.		
34	Bob Eisenmann	AffirmativeWith Comment	6	6.17.1.5.5	Editorial	The note in this section contains a 'may'. No permission is being given to have notice.	Reword	Accepted. Revised note to use might		BP America, Inc
65	R. Daryl Taylor	AffirmativeWith Comment	6	6.17.2.2	Editorial	3 requirements in 1 clause	separate the requirements (maybe use an a) b) c) list.	Not Accepted. Shalls relate to same item.		
66	R. Daryl Taylor	AffirmativeWith Comment	6	6.17.2.5	Technical	the term "separate" implies that a passive sensor could be used along with the active sensor. Why do this?	Delete "separate"	Accepted. Replaced separate with additional. Passive probes preferred for reliability.		

74	Mantosh BHATTACHARYA	NonVoter	6.17.3.1.10 Casing/Housing Transducers	6.17.3.1	Technical	Add - one separate clause for water proof accelerometer for measurement of casing / column pipe vibration for vertical long shaft pump .	6.7.3.1.16 - underwater vibration testing and measurement caused by resonance or unsteady fluid flow. The waterproof accelerometers and can be used to measure and identify structural vibration, cavitation,.	Not Accepted. Application too specific		Petrofac
33	Bob Eisenmann	AffirmativeWith Comment	6	6.17.3.1.1	General	This clause only states what the standard accelerometer is, not what is allowed or prohibited.The standard covers accelerometers but	Consider specifying allowable accelerometer types.	Noted. Out of scope for this edition		BP America, Inc
32	Bob Eisenmann	AffirmativeWith Comment	6	6.17.3.1.7	General	In addition to the requirents here there should be a flatness requirement. Waveyness of the surface could have a great affect on the tansducer.	Consider and implement a flatness requirement suitable for casing mounted transducers.	Not Accepted. Not necessary		BP America, Inc
54	Bill Robichaux	AffirmativeWith Comment	6	6.17.3.1.7	Technical	You must address the machined surface so that it does not reduce the wall thickness of the mounting surface (e.g. pressure retaining boundry, split-line flange thickness, etc...)	The mounting surface shall not reduce the wall thickness by spot facing to create trhe flat surface. It is perferrable to have a raised faced boss for all accelerometer installations.	Not Accepted. Beyond scope of standard		Shell
48	Brian Howard	NonVoter	6	6.17.3.1.9	Technical	For some specific engines design and stud arrangement (e.g., aero-derivatives), the mounting holes are 1/4-18 NPT thread and not double-ended.	The vendor shall supply with each velocity sensor a standard mounting option consisting of a double-ended, flanged, 1/4-28-UNF-2A threaded, AISI Standard Type 300 stainless steel mounting stud. 1/4-18 thread (flush mounted, not double-ended) is admissible on eroderivative engines (see Figure C.2 for an example of this arrangement)	Not Accepted. Too specific to one equipment type.		Bently Nevada Corporation
31	Bob Eisenmann	AffirmativeWith Comment	6	6.17.3.2.2	General	Add a tolerance to make the length measurable and practical.	Add a tolerance to make the length measurable and practical.	Not Accepted		BP America, Inc
67	R. Daryl Taylor	AffirmativeWith Comment	6	6.17.3.3	Editorial	several clauses contain multiple requirements	separate the requirements. It may be useful to gather all of the requirements into a numbered list	Not Accepted. Shalls relate to same item.		
50	Brian Howard	NonVoter	6	6.17.3.3.10	Technical	For some specific engines design and stud arrangement (e.g., aero-derivatives), the mounting holes are 1/4-18 NPT thread and not double-ended.	The vendor shall supply with each velocity sensor a standard mounting option consisting of a double-ended, flanged, 1/4-28-UNF-2A threaded, AISI Standard Type 300 stainless steel mounting stud. 1/4-18 thread (flush mounted, not double-ended) is admissible on eroderivative engines (see Figure C.2 for an example of this arrangement)	Not Accepted. Too specific to one equipment type.		Bently Nevada Corporation
30	Bob Eisenmann	AffirmativeWith Comment	6	6.17.3.3.2	General	Since moving coil velocity transducers are part of the standard it would be good to standize on the calibration.	Provide a standard calibration for moving coil velocity transducers.	Not Accepted. Specification is be agreed between purchaser and vendors		BP America, Inc
29	Bob Eisenmann	AffirmativeWith Comment	6	6.17.3.3.8	General	In addition to the requirents here there should be a flatness requirement. Waveyness of the surface could have a great affect on the tansducer.	Consider and implement a flatness requirement suitable for casing mounted transducers.	Not Accepted. Not necessary		BP America, Inc

49	Brian Howard	NonVoter	6	6.17.3.3.8	Technical	For some specific engines design and stud arrangement (e.g., aero-derivatives), the mounting holes are 1/4-18 NPT thread and not double-ended.	The vendor shall supply with each velocity sensor a standard mounting option consisting of a double-ended, flanged, 1/4-28-UNF-2A threaded, AISI Standard Type 300 stainless steel mounting stud. 1/4-18 thread (flush mounted, not double-ended) is admissible on eroderivative engines (see Figure C.2 for an example of this arrangement)	Not Accepted. Too specific to one equipment type.		Bently Nevada Corporation
55	Bill Robichaux	AffirmativeWith Comment	6	6.17.3.4	Technical	Since Velometers are used at Low Frequency applications (2 Hz) like CWT (Cooling Water Tower Gearbox applications), there needs to be a statement to address the harsh environment and resistance to chemicals, moisture, etc... to ensure the probe is designed and selected for such applications.	Add a requirement " The probe shall be selected for the environmental conditions at which it is installed. This includes, but not limited to, process or chemical resistance, High Moisture environments and/or a changing temperature environment.	Not Accepted. Too specific.		Shell
35	Bob Eisenmann	AffirmativeWith Comment	6	6.17.3.4.2	Technical	The physical length requirement for the velocity sensor cable is not a requirement, since it only gives a nominal length. If this is deemed necessary, there should be a range for the length requirement.	Provide a length range specification for the sensor cable. Otherwise, the requirement has no value and is not measureable.	Not Accepted. Nominal directive		BP America, Inc
68	R. Daryl Taylor	AffirmativeWith Comment	6	6.17.3.4.4	Editorial	2 requirements in 1 clause	separate the requirements	Not Accepted. Shalls relate to same item.		
56	Bill Robichaux	AffirmativeWith Comment	6	6.17.4.1.3	Technical	Add Type E Grounded to this list	add Type E grounded thermocouples to this list as a well.	Not Accepted. Too specific		Shell
40	Brian Howard	NonVoter	6	6.17.4.1.6	Technical	for hazardous area compliance (ATEX or IECEx) IP54 or higher is required: the overbraid may create issues in meeting such requirement	Delete the requirementOR (as alternative).....NOTE Stainless steel overbraiding can be difficult to seal in some installations and could not be feasible where a minimum IP rating must be achieved (e.g. for hazardous area type of protection)	Not Accepted. Overbraiding is a bulleted item.		Bently Nevada Corporation
28	Bob Eisenmann	AffirmativeWith Comment	6	6.17.4.3.4	General	The text reads "The junction box(s) shall not be mounted on the machine casing but in a vibration-free environment." A vibration free environment seems excessive as a shall statement in this case	Consider changing "vibration-free environment" to something similar to 6.18.2.2 C "Mounted separate from the machine in a location to minimize vibration. "	Accepted. Paragraph revised.		BP America, Inc
57	Bill Robichaux	AffirmativeWith Comment	6	6.17.4.3.4	Technical	Junction Box shall be supported to prevent free motion.	add Junction Box shall be supported to prevent free motion from wind, vibration and physical impact in the field,	Not Accepted. Too specific		Shell
27	Bob Eisenmann	AffirmativeWith Comment	6	6.18.1.1.1	General	Previous editions have required 45 degree probes. This is still a desired arrangement that should be reinstated. Exceptions can be handled as such, exceptions.	Consider reinstating the 45 degree requirement for proximity probe orientation as in prior editions of API 670.	Not Accepted. 6.18.1.1. a) specifies 90 degrees.		BP America, Inc
39	Brian Howard	NonVoter	6	6.18.1.1.2	Technical	According to API 617 6.6.1.3.2 and 6.8.9.6 the probe area can be metallized or plated if the supplier has proven experience or test to reduce the electrical runout.	b) Shall not be Metalized or plated unless allowed for in the machine mechanical standard	Not Accepted. Other means shall be used to reduce runout.		Bently Nevada Corporation
75	Dietmar Sterns	NonVoter	6.18.1.1.2	6.18.1.1.2	Technical	The requirement should focus on a limit for total runout. A requirement for final surface finish is not needed, just like a manufacturing procedure for this surface is not needed.	delete line c). If deleting seems too radical, add a note saying: "It is recommended that the surface should be manufactured with a surface finish of 1 µm (32 µin.) or less."	Not Accepted. Surface finish can impact runout.		RENK Aktiengesellschaft

76	Simon Bradshaw	NonVoter	6.18.1.1	6.18.1.1.2	Technical	Comment:Remove point b)	Our standard, compliant with API610 runout requirements, is to use M819 coating	Not Accepted. Application too narrow.		Trillium Flow Services Ltd
38	Brian Howard	NonVoter	6	6.18.1.1.4	Technical	The radial probes gaps are set at -10.5 +/-1 volts DC. We find this voltage is more centered in the linearity range of the probe response and allows more clearance on units where the rotor's movement from 'at rest' is towards the probe tip. Probe gap settings are made at room temperature without benefit of oil circulation. As noted above, there is a tolerance +/-1 V on the gap setting.	The probe gap shall be set at -10.5 Vdc (±1.0 Vdc).	Not Accepted. Application too specific		Bently Nevada Corporation
77	Dietmar Sterns	NonVoter	6.18.1.1.4	6.18.1.1.4	Technical	Bently Nevada Specifiation and Ordering Information for 8mm: Recommended Gap Setting for Radial Vibration: -9Vdc (approximately 1.27 mm (50 mils))	The probe gap shall be set at -9 Vdc (+/-0.2 Vdc)	Not Accepted. Application too specific		RENK Aktiengesellschaft
37	Brian Howard	NonVoter	6	6.18.1.2.7	Technical	We find 10.5 Volt to be more centered in the linearity range of the probe response and allows more clearance for movement towards the probe tip.	-10.5 Vdc (±0.2 Vdc).	Not Accepted. Application too specific		Bently Nevada Corporation
78	Dietmar Sterns	NonVoter	6.18.1.2.7	6.18.1.2.7	Technical	Bently Nevada Specifiation and Ordering Information for 8mm. Linear Range: 2 mm (80 mils). Linear range begins at approximately 0.25 mm (10 mils) from target and its from 0.25 to 2.3 mm (10 to 90 mils) (approximately -1 to -17 Vdc)	The axial probe gap shall be set such way, that the transducer's output voltage is -9 Vdc (+/-0.2 Vdc), when the rotor is in the center of its thrust float.	Noted. Out of scope for this edition		RENK Aktiengesellschaft
26	Bob Eisenmann	AffirmativeWith Comment	6	6.18.1.3.4	General	True veritcal needs a tolerance to be measurable.	Add a tolerance.	Not Accepted. Not a critical measurement.		BP America, Inc
25	Bob Eisenmann	AffirmativeWith Comment	6	6.18.1.4	General	In the past there have been phase angle transducers placed axially. This is bad practice and should be prohibited.	Add a requirement that phae angle transducers are mounted radially and prohibit axial phase angle reference probes.	Not Accepted. Good practices, but not standard		BP America, Inc
51	Brian Howard	NonVoter	6	6.18.1.4.4	Technical	tagging and reference are commonly on the probe instrument, not on the casing.	Unless otherwise specifcd, the phase reference probe and...	Accepted in principle. Clarified that marking is outside of machine, not on the case.		Bently Nevada Corporation
24	Bob Eisenmann	AffirmativeWith Comment	6	6.18.1.6.1	Editorial	The can looks like it is a permission and should be changed to a 'may.'	Re-word	Accepted. Changed can to may		BP America, Inc
52	Brian Howard	NonVoter	6	6.18.1.7.1	Technical	three additional independend speed probes are not possible on aeroderivative gas turbines.	Add a special exception for aerodarivatives to allow two probes only, directly wired to a SIS ODS. Speed can be shared via data link, analog or buffered (isolated) output.	Not Accepted. Application too specific, do not agree with data link/buffered output due to possibility of signal delay.		Bently Nevada Corporation
69	R. Daryl Taylor	AffirmativeWith Comment	6	6.18.1.8.3	Editorial	revise for claritty	change to " . . .shall not be mounted across a casing split line."	Not Accepted. Do not want to mount across any split line.		
81	Dietmar Sterns	NonVoter	6.18.1.9.1.2	6.18.1.9.1.2 a)	Technical	other arrangements, not axially collinear, are working as well as this one, and are proven by experience too.	change words to:"Bearings whose length-to-diameter ratio is greater than 0.5 shall be provided with two embedded temperature sensors located close to each other, at the three-quarter arc length (75 % of the pad length from the leading edge)."	Not Accepted. Standard layout acceptable; section does not include tilt pad bearings.		RENK Aktiengesellschaft

36	Brian Howard	NonVoter	6	6.18.1.9.2.2	Technical	Thrust bearing pads may have an offset pivot. For these pad designs temperature sensors are therefore located further than 75% of the leading edge.	Unless otherwise specified, thrust bearing temperatures sensors.....NOTE: Thrust pads with an offset pivot design may have the temperature sensors located further than 75% of the leading edge	Not Accepted. Technically correct, but too difficult standardize.		Bently Nevada Corporation
58	Bill Robichaux	AffirmativeWith Comment	6	6.18.1.9.2.5	Technical	add a requirement that the penetration fitting shall be designed to prevent oil wicking or oil leakage into the Junmction Box. This has been an issue in the past and can cause the probe to malfunction when the junction box fills with liquid.	add a requirement that the penetration fitting shall be designed to prevent oil wicking or oil leakage into the Junmction Box.	Not Accepted. Change does not add to standard.		Shell
70	R. Daryl Taylor	AffirmativeWith Comment	6	6.18.1.9.2.5	Editorial	3 requirements in 1 clause	separate the requirements	Not Accepted. Shalls relate to same item.		
59	Bill Robichaux	AffirmativeWith Comment	6	6.18.2.1.12	Technical	add a statement that all cables shall be properly identified, laabeled with heat shrink wrap tubing for complete traceability when exposed on the outside of the case in the junction box.	add new statement " all cables shall be properly identified, laabeled with heat shrink wrap tubing for complete traceability when exposed on the outside of the case in the junction box."	Not Accepted. Already specified in 6.17.1.3.4		Shell
60	Bill Robichaux	AffirmativeWith Comment	6	6.18.2.2	Technical	add a statement e) that prohibits the location in a place where it interferes with maintenance activities,.	add new e) the location of the junction boxes shall be located in a position that does not interfere with maintenance activities or cause tripping hazards"	Accepted in principle. Revised 6.181.2.2 c) to say the installation cannot interfere with maintenance activities		Shell
86	Simon Bradshaw	NonVoter	6.18.2.4	6.18.2.4.1	Technical	For sleeve bearings (not tilting pad) the RTD are spring loaded as permitted at para. 6.18.2.4.6.Note: clarification always necessary	Make it that both types may be used.	Not Accepted. Standard is embedded, option for bayonet		Trillium Flow Services Ltd
15	Bob Eisenmann	AffirmativeWith Comment	6	6.5.3	Technical	Who is the party responsible for this? What is the output that it can be measured?	Define who is responsible and what data they need to furnish as proof, e.g. a calibration curve on the shaft or shaft material.	Not Accepted. Annex G provides template for deciding scope. Only verification is done in the field, calibration is done by probe supplier		BP America, Inc
16	Bob Eisenmann	AffirmativeWith Comment	6	6.5.5	General	Since there is more than one calibration method refered to by the referecne, the output from this requirment should inlcude the method of calibration and the calibration outcome or curve.	Require details of the method of calibration used and the calibration curve.	Noted. To be considered for next edition		BP America, Inc
19	Bob Eisenmann	AffirmativeWith Comment	6	6.6.3	General	The intention is to provide a proximity probe system that conforms to the calibraton requirement in Table 1 and clause 6.17.1.5.1.1, not to orovide a system that calibrated to something not specified.	Specify the requirement as conformity to 6.17.1.5.1.1 for the shaft material used or material of the probe target area.	Accepted in principle. Paragraph revised to include reference to 6.17.1.5.1.1.		BP America, Inc

87	Dietmar Sterns	NonVoter	6.6.3	6.6.3	Technical	in more than 95% of gear box orders, proximity probes do not get calibrated to the specified material of the shafts.Obviously, for all through hardened, case hardened and nitrided steels used in gear units, such additional calibration is not needed. The calibration to Type 4140 steel works fine.Experience available for steels Type 4140, 4320, 4340, E4340.	add a note to 6.6.3:"For through hardened, case hardened and nitrided steels as used in gear units (Types 4140, 4320, 4340, E4340), this calibration is not needed. The calibration to Type 4140 steel can be used for these applications."	Accepted in principle. Note added to 6.6.2		RENK Aktiengesellschaft
45	Brian Howard	NonVoter	6	6.8.4	Technical	Clean air purging is necessary when components are not design to withstand the moisture and pollutants present in the environment	If specified, air purging shall be used when the conformal coating or pullution degree can't guarantee to withstant the environment pollutant to avoid moisture or corrosion problems, even when weatherproof or watertight housings are used (see 6.8.2 and 6.8.6). Purge air shall be clean and dry.	Not Accepted. Do not understand comment.		Bently Nevada Corporation
44	Brian Howard	NonVoter	6	6.8.6	Technical	Not all proven and available systems have conformal coating for any aggressive environment	If specified, PCBs shall have conformal coating to provide protection from moisture, fungus, and corrosion (if coating can't guarantee the adequate level of protection, See 6.8.4)	Not Accepted. Do not understand comment.		Bently Nevada Corporation
46	Brian Howard	NonVoter	6	6.9.1	Technical	Most common power modules are universal analog from 120 to 240 Vac, 50/60 Hz withouth switch selector	remove switch selectableOR... switch selectable or auto-switching,	Accepted in principle. Updated paragraph		Bently Nevada Corporation
72	Brian Howard	NonVoter	6	6.9.2	General	Depending on MPS vendor, some voltage levels are not available. Additional note to allow external power supplies	If specified, the following power supply options may be used (with external power supply, if needed)a) 20 Vdc to 30 Vdc.....	Accepted. Already covered.		Bently Nevada Corporation
114	Mantosh BHATTACHARYA	NonVoter	7.1.4	7.1.4.6	Technical	Add note after 7.1.4.6 on 2oo4 voting logic as normally practiced by end user / operating companies	Note - Trip function on HH vibration can be considered based on 2oo4 configuration (2 probes out of the 2 bearings). This configuration may increase the availability of equipment due to the fact that single or two probe failures will not trip the machine. High radial vibration on the one end of the machine will also result in the other end (single shaft machine with two bearings).	Not Accepted. 2oo4 voting already available in most systems.		Petrofac
96	Bob Eisenmann	AffirmativeWith Comment	7	7.1.4.7	General	Since there is more than one calibration method refered to by the referecne, the output from this requirment should inlcude the method of calibration and the calibration outcome or curve.		Not Accepted. Comment does not match paragraph number.		BP America, Inc
95	Bob Eisenmann	AffirmativeWith Comment	7	7.1.5	Technical	The seccion on axial position monitoring has lost an important requiriemnt from the previous ediion, 'shall have separate zeroing and gain	Add a requirement to have shall have separate zeroing and gain adjustments for the two axial position channels.	Accepted in principle. Added 7.1.1.5 c) to include zero adjustment		BP America, Inc
115	Neetin Ghaisas	AffirmativeWith Comment	7.1.5	7.1.5	Technical	Provide a choice for more than two axial probes.	Add an if specified paragraph that allows users to select three axial probes instead of the conventional two axial displacement probes.	Not Accepted. Application too narrow.		Fluor Corporation

113	Brian Howard	NonVoter	7	7.1.5.5	Technical	Would be good to add an explanation of why this paragraph exists.	NOTE: This paragraph addresses instance of axial probe failure due to contact between the rotor and probe tip. Under these circumstances the probe failure counts as a vote to trip but does not cause a trip.	Not Accepted. 7.1.5.5 addresses failure of 1 or both axial probes which could be caused by rotor contacting the probe tip.		Bently Nevada Corporation
98	R. Daryl Taylor	AffirmativeWith Comment	7	7.1.7.3	Editorial	2 requirements in 1 clause	separate the requirements	Not Accepted. Shalls relate to same item.		
117	Mantosh BHATTACHARYA	NonVoter	7.1.7.5	7.1.7.5	Technical	ADD a note on spike energy measurement for anti-friction bearing.	add - Spike energy is the high frequency levels of the vibration being produced by the "ringing" of the internal surfaces rubbing together. Spike energy detects frequencies beyond the linear range of most industrial transducers.	Not Accepted. Spike energy not referenced in the standard		Petrofac
112	Brian Howard	NonVoter	7	7.1.7.5.b.iii	Technical	A band pass starting at 5 Hz would attenuate a 1X signal of 300 rpm (5Hz) by 70.7%. Rolling element bearing (REB) cage frequencies are sub synchronous so that would be less than 5 Hz for a 300 rpm machine.	Equipment operating at shaft speeds from 750 rpm down to 300 rpm shall be monitored in a frequency range from 1.5 Hz to 1000 Hz.	Accepted. Paragraph updated		Bently Nevada Corporation
89	Bob Eisenmann	AffirmativeWith Comment	7	7.1.8	General	This section is titled temperature monitoring. The scope includes temperatures measurements in addition to bearing metal temperatures, but sp,e provisions in this section appear to relate to bearing temperatures.	Can the document clarifyto which temperatures this section pertains?	Not Accepted. Section applies to bearing temperature and any other machinery temperatures.		BP America, Inc
88	Bob Eisenmann	AffirmativeWith Comment	7	7.2.1.13	Editorial	High quality' is vague and unmeasurable.	Reword	Not Accepted. Importance of ODS cabling cannot be understated.		BP America, Inc
97	Bill Robichaux	AffirmativeWith Comment	7	7.2.1.14 (new)	Technical	add a statement to include acceleration trip functionality on the Over Speed Ttrip system. Based on internaql test results the Acceleration trip function provides a much quicker response time than the electronic OST system.	add new statement "if specified, an acceleration trip function or capabiolities shall be provided." Also add a new NOTE "Note: An acceleration trip system is used to track the instantaneous change in speed and perform a safe trip condition if the slope of the line becomes vertical or near vertical."	Not Accepted. O.4 recemmends avoiding trip on acceleration		Shell
94	Bob Eisenmann	AffirmativeWith Comment	7	7.2.1.7	General	Taken together with the note it is not clear as to whether this applies to integrally geared compressors. If does not, then what is the technica justificaiton for other equipment?	Clariy.Does this prohibit driving equipment rather than 'other mechanical equipment.'	Accepted in principle. Removed note.		BP America, Inc
91	Brian Howard	NonVoter	7	7.2.3.1	Technical	Independend speed probes for the ODS are not possible on aeroderivative gas turbines.	Add a special exception for aeroderivatives to allow two probes only, directly wired to a SIS ODS. Speed can be shared via data link, analog or buffered (isolated) output.	Not Accepted. Application too specific, do not agree with data link/buffered output due to possibility of signal delay.		Bently Nevada Corporation
92	Brian Howard	NonVoter	7	7.2.4.1.1	Technical	Aero Derivative GT overspeed system is based on 2 sensors with 1oo2 logic	see comment for 6.18.1.7.1	Not Accepted. 7.2.4.1.2 covers this scenario		Bently Nevada Corporation
93	Brian Howard	NonVoter	7	7.2.4.1.3	Technical	Degradation to 1oo1 implies a reduction of integrity level and it might be not acceptable or acceptable only for a limited amount of time (with compensating measures) if SIL is required	If specified, degradation to one-out-of-one voting in the case of a loop fault in a two channel system, is allowed (with or without a time limitation, depending upon SIL target if required)	Not Accepted. 7.2.1.2 covers SIL target calculations.		Bently Nevada Corporation
99	R. Daryl Taylor	AffirmativeWith Comment	7	7.2.4.4.3	Editorial	2 requirements in 1 clause	separate the requirements	Not Accepted. Shalls relate to same item.		

102	Bob Eisenmann	AffirmativeWith Comment	7	7.3.1.2	General	This clause requires surge detection on all axial flow compressors. Since the document also refers to gas turbines, it is not clear whether this applies to the axial flow compressor in a gas turbine. Clarify the intent.	Clarify the intent as to whether this covers gas turbines, which have axia flow compressors.	Accepted. Re-wrote paragraph to specify process compressors.		BP America, Inc
100	R. Daryl Taylor	AffirmativeWith Comment	7	7.3.3.1	Editorial	3 requirements in 1 clause	separate the requirements	Not Accepted. Second and third shall clarify the first.		
90	Brian Howard	NonVoter	7	7.3.3.3	Technical	Sensors and transducers to antisurge control and surge detection are typically not redundant, i.e. the same transmitter is used by both systems.	Unless otherwise specified, sensors used for compressor surge detection...	Not Accepted. Protection has to be separate from control.		Bently Nevada Corporation
103	Bob Eisenmann	AffirmativeWith Comment	7	7.3.4.1.4	Editorial	Multiple 'may' in Note.	Reword	Accepted. Reworded note.		BP America, Inc
101	R. Daryl Taylor	AffirmativeWith Comment	7	7.3.4.1.5.2	Editorial	multiple requirements in 1 clause	separate the requirements	Not Accepted. Second shall clarifies the first.		
104	Bob Eisenmann	AffirmativeWith Comment	7	7.3.4.3.1	Editorial	May in note	Reword	Accepted. Replaced by might		BP America, Inc
105	Bob Eisenmann	AffirmativeWith Comment	7	7.3.4.3.2	General	This requirement has not specitic requirement. Either Reword or delete.	Reword to give a requirement or delete.	Accepted in Principle. Reworded to provide paragraph numbers		BP America, Inc
118	Mantosh BHATTACHARYA	NonVoter	7.3.4.3.	7.3.4.3.4	Technical	7.3.4.3.4The surge detector shall be capable of disabling the alerting and counting functions during compressor start-up or shutdown is not completely correct . During start up , the ASV (Anti surge valve) is kept fully open as start permissive , still due to some debris or improper cleaning of pipeline , surge was detected and tripped the machine at recycle run . Similarly , surge detector must be active during shutdown up to certain speed range as it provides the adequacy of hot/ cold recycle valve sizing done during dynamic simulation of compressor operation .	7.3.4.3.4The surge protection and detector shall be ON during compressor start-up or shutdown.	Not Accepted. Standard describes system design features, not operating philosophy.	https://eballotprodstorage.blob.core.windows.net/eballotscontainer/Debris%20inside%20ASV.JPG	Petrofac
119	Mantosh BHATTACHARYA	NonVoter	7.3.4.3.	7.3.4.3.4	Technical	7.3.4.3.4The surge detector shall be capable of disabling the alerting and counting functions during compressor start-up or shutdown is not completely correct . During start up , the ASV (Anti surge valve) is kept fully open as start permissive , still due to some debris or improper cleaning of pipeline , surge was detected and tripped the machine at recycle run . Similarly , surge detector must be active during shutdown up to certain speed range as it provides the adequacy of hot/ cold recycle valve sizing done during dynamic simulation of compressor operation .	7.3.4.3.4The surge protection and detector shall be ON during compressor start-up or shutdown.	Not Accepted. Standard describes system design features, not operating philosophy.	https://eballotprodstorage.blob.core.windows.net/eballotscontainer/Debris%20inside%20ASV.JPG	Petrofac
106	Bob Eisenmann	AffirmativeWith Comment	7	7.3.4.4.3	Editorial	May in note	Reword.	Accepted. Replaced by might		BP America, Inc
			7	7.3.4.4.1	Add-hoc	Consider deleting this section		Accepted. Deleted this paragraph		
107	Bob Eisenmann	AffirmativeWith Comment	7	7.4.1.2	Editorial	May in note	Reword.	Accepted. Replaced by might		BP America, Inc

108	Bob Eisenmann	AffirmativeWith Comment	7	7.4.2.2	General	Why is there a requirement on the purchaser?	Consider what the requirement is who is responsible. Or, is this just datasheet information?	Not Accepted. Purchaser to know what is safety critical in the facility and inform vendor.		BP America, Inc
111	Brian Howard	NonVoter	7	7.4.4.2.4	Technical	Depending on applicable maximum response time, some shutdown signals processed by MPS may be directly connected to final elements.	Unless otherwise specified, the trip system and the ODS shall both receive final shutdown element feedback (Figure 22).	Not Accepted. Final element must feedback to both systems.		Bently Nevada Corporation
109	Bob Eisenmann	AffirmativeWith Comment	7	7.4.4.3.2	General	The requirement is to give careful consideration. This is not measurable and will provide nothing.	If there is an actual requirement provide it, or delete this as a requirement.	Not Accepted. Addresses system design.		BP America, Inc
110	Bob Eisenmann	AffirmativeWith Comment	7	7.4.5.2	Editorial	This bulleted item does not use standards language for permission or a requirement, i.e. no shall or may.	Clarify.	Accepted in Principle. Revised paragraph		BP America, Inc
120	Bob Eisenmann	AffirmativeWith Comment	8	8.4.1	Editorial	Rather than worry about what is necessary, suggest delete the word necessary, since it is not needed.	Delete word 'necessary.'	Accepted. Removed 'necessary'		BP America, Inc
121	Bob Eisenmann	AffirmativeWith Comment	9	9.2.3 e)	General	This requirement for special tools only requires that metric items be identified. It should be equally important to identify any tool	Consider requiring identification of all special tools.	Accepted in Principle. Revised to include all special tools		BP America, Inc
123	Richard Dow	AffirmativeWith Comment	9.3	9.3	General	I believe that API legal has asked us to make much of what is in contract data an appendix rather than part of the narrative?	TF to review.	Accepted in Principle. Task force will restructure paragraphs		
122	R. Daryl Taylor	AffirmativeWith Comment	9	9.3.1 to 9.3.5	Editorial	multiple requirements in 1 clause	separate the requirements	Accepted. Section revised.		
124	Richard Dow	AffirmativeWith Comment	all pages	all pages	Editorial	Every page contains the statement "this document is not an API document ..."	TF or API editors will have to remove from each page.	Accepted. API editors will remove		
136	Bob Eisenmann	AffirmativeWith Comment	Annex I	Annex I	General	Since this standard is for machinery protection, this annex should make it clear that if using trip multiply, the a primary consideration is that no harm will be done. The main idea seems to be to prevent alarms, not protect the equipment.	Consider the intent and add language to clarify that if trip multiply is used, that it should be designed to do no harm, still protecting the equipment.	Not Accepted. Note in 7.1.4.8 addresses use of TM.		BP America, Inc
126	Bob Eisenmann	AffirmativeWith Comment	Annex C	C.1.1	General	The requirement is to pay proper attention to... This is not measurable.	Provide a measurable requirement.	Accepted. Paragraph revised		BP America, Inc
128	Mantosh BHATTACHARYA	NonVoter	Annex C Accelerometer Mounting	C.2.1	Technical	Add - when high temperature sensors are to be mounted with adapter plates - particularly for screw compressor , special care to be taken.	Add -when high temperature sensors are to be mounted with adapter plates - particularly for screw compressor , special care to be taken.	Accepted in Principle. Added note on temperature.	https://eballotprodstorage.blob.core.windows.net/eballotscontainer/adapter%20for%20sensor.JPG	Petrofac
127	Bob Eisenmann	AffirmativeWith Comment	Annex C	C.2.2	General	Is there a requirement for flush mounting or not. The text is not clear.	Clarify.	Accepted. Revised paragraph		BP America, Inc
125	Bill Robichaux	AffirmativeWith Comment	Annex C	C2.2.e	Technical	Add a new statement to prevent the flush mounted probes from being installed on any access cover or gasketed surface and the gasket can dampen the vibration readings	add new "e) the flush mounted probes shall not be installed on any access cover or gasketed mounted cover." Note: If the accelerometer or velocimeter is mounted on any access cover or gasketed surface this type of mounting arrangement can dampen the vibration readings taken.	Accepted in Principle. Added to standard		Shell

132	Brian Howard	NonVoter	Annex E	E.1	Technical	rms is too limiting. Should include rms and 0-pk since it is mentioned in E.2.1.	The second path is integrated to 0-pk or rms velocity units (inches per second or millimeters per second).	Accepted in principle. Updated to remove subunits.		Bently Nevada Corporation
130	Bob Eisenmann	AffirmativeWith Comment	Annex E	E.2.5	General	Shall be considered is not measurable.	Provide a measureable requirement.	Not Accepted. Wording is adequate.		BP America, Inc
131	Bob Eisenmann	AffirmativeWith Comment	Annex E	E.2.5	Editorial	Care and understanding shall be applied to each application to ensure that adequate machine protection is provided. This is not measurable as a requirement.	Delete as a requirement or provide a proper requirement.	Accepted. Delete last sentence		BP America, Inc
133	Bob Eisenmann	AffirmativeWith Comment	Annex F	F.3	Editorial	The requirement is for the vendor to provide what has been selected from table F.2, not a requirement on the purchaser.	Rewrite.	Accepted. Revised		BP America, Inc
80	Dietmar Sterns	NonVoter	6.18.1.9.1	Figure 13	Editorial	there are no more two notes below Figure 13. Accordingly, references to Note 1 and Note 2 need corrected	delete reference to Note 2	Accepted. Revised figures		RENK Aktiengesellschaft
82	Simon Bradshaw	NonVoter	6.18.1.9.1.2	Figure 13	Technical	Electric motors' bearing RTD installation (as per here below sketch) is confirmed to be in the way that the RTD measurement point is always located 30 degrees (±10 degrees) from the vertical centerline in the normal direction of rotation as requested by API 670 even if the RTD connection is installed in horizontal position.Note: RENK bearing housings (used by most of the motors suppliers) allow horizontal installation only. Often, after PO, we are obliged to issue formal CR with consequent time impacts. In our experience motors supplier never made formal deviation, even if they well know, so if the paragraph change will help.	Modify diagram to allow for horizontal mounting of the RTD	Not Accepted. Application to narrow.	https://eballotprodstorage.blob.core.windows.net/eballotscontainer/api1.png	Trillium Flow Services Ltd
83	Dietmar Sterns	NonVoter	6.18.1.9.2	Figure 15	Editorial	second digit behind the dot in the dimension 0.76 mm is exaggerated.	Round the dimension 0.76 mm to 0.8 mm, same as in Figures 13 and 14	Accepted. Revised figure		RENK Aktiengesellschaft
84	Dietmar Sterns	NonVoter	6.18.1.9.2	Figure 15	Technical	The bores for temperature sensor location are shown to be oriented perpendicular to the working face of the bearing, but that is just one of different possibilities. It is common to have bores that are oriented parallel to the working face of the bearing (maybe even more common than radial orientation).	Add a note mentioning that the orientation of temperature sensor bores can differ from that shown in Figure 13, for example orientation parallel to the working face of the bearing.	Not Accepted. Figure labelled as typical. Only sensor locations are specified.		RENK Aktiengesellschaft
85	Dietmar Sterns	NonVoter	6.18.1.9.2	Figure 15	Technical	Distance between sensor tip and running face is shown to be 1.55 to 2.5 mm. This is not the same in Figures 13 and 14. And the min value should have one digit less behind the dot.	change recommended distance to the same value as in Figures 13 and 14:"1.5 mm to 6.4 mm (0,06 in to 0,25 in)"	Accepted. Updated significant figures. No changes to dimensions, radial bearings typically have thicker babbitt.		RENK Aktiengesellschaft
116	Mantosh BHATTACHARYA	NonVoter	7.1.6.10	Figure 16	General	The Rod drop indicator position shows only 6 o'clock position whereas requirement is 12 o'clock position and 6 o'clock position.	add one rod drop sensor to show 12 o'clock position	Not Accepted. All probes shown in Figure 12.		Petrofac
152	Richard Dow	AffirmativeWith Comment	figure 24, 25, 26	Figure 24,25,26	Editorial	are these figures misplaced? they seem to have nothing to do with the paragraph they are next to?	TF to review.	Accepted. Re-ordered figures		

153	Simon Bradshaw	NonVoter	Section 7	Figure H.3	Technical	The protection systems needed to prevent damage to centrifugal pumps in a Loss Of Suction (LOS) event is not covered. Vibration measurement alone is not adequate to protect against these events. They require monitoring of the suction pressure and temperature and in certain cases also the balance line pressure and temperature.	This should be added as a subsection within section 7.	Not Accepted. Not all hazop failure scenarios covered by 670.		Trillium Flow Services Ltd
79	Dietmar Sterns	NonVoter	6.18.1.9.1	Figure13	Technical	The bores for temperature sensor location are shown to be radially oriented, but that is just one of different possibilities. It is common to have bores that are axially oriented (maybe even more common than radial orientation).Same for Figure 14	Add a note mentioning that the orientation of temperature sensor bores can differ from that shwon in Figure 13, for example axial orientation.	Not Accepted. Figure labeled as typical. Only sensor locations are specified.		RENK Aktiengesellschaft
135	Bob Eisenmann	AffirmativeWith Comment	Annex I	I.3.3	Editorial	This says a mulitplier is required, ... There is no requirement here.	Reword.	Accepted. Reworded		BP America, Inc
137	Brian Howard	NonVoter	Annex I	I.6.2	Technical	The MPS can determine itself if the speed is within the TM speed range. Also, TM and any other State Based Alarming can be done within the MPS. Suggest adding the following.	I.6.2 Absolute Speed Range SensingThis method requires the machine control system or the MPS to sense the rotational speed of the machine and activates an output any time the machine is operating at speeds between rpm1 and rpm2 (see Figure I.1). This is the preferred method.Any parameter within the MPS can also be used to determine the TM state to be implemented.	Accepted in principle. Updated I.1.1 to include internal MPS logic.		Bently Nevada Corporation
138	Bob Eisenmann	AffirmativeWith Comment	Annex J	J.3	Editorial	The use of the word, 'must'.	Reword	Accepted. Replaced with shall		BP America, Inc
139	Bob Eisenmann	AffirmativeWith Comment	Annex K	K.5.2.2	General	This specific requirement advises to perform surge tests. The equipment OEM and the user should make this determintation independent of the precieved need of assurance of the surge detection system. The annex should be clear that surge can have adverse consequences, whereas the focus appears to be on the detection system.	Make clear in this annex the consequences that a surge can have.	Not Accepted. Consequences of surge are assumed to be understood.		BP America, Inc
141	Bob Eisenmann	AffirmativeWith Comment	Annex L	L.4.2.4.2	General	This clause says that Table L.2 is taken from ISO 13849. Is this by permission?It is generally poor practice for one standard to duplicate material in another while referencing the other standard at the same time. Also, ISO standards should have a copywrite, and duplicating material may not be proper.	Review the use of ISO and other standards' material. It may be better to call out other standards than duplicating material in other standards.	Not Accepted. API has approval to re-use the charts.		BP America, Inc
140	Bob Eisenmann	AffirmativeWith Comment	Annex L	L.4.5.2.2	Editorial	This clause has a shall in this informative annex.	Change the word 'shall' in this informative Annex.	Accepted. Replaced shall with are		BP America, Inc
142	Bob Eisenmann	AffirmativeWith Comment	Annex L	L.4.8.1	Editorial	This clause has a shall in this informative annex.	Change the word 'shall' in this informative Annex.	Accepted. Reworded		BP America, Inc
143	Bob Eisenmann	AffirmativeWith Comment	Annex M	M.1.10	Editorial	This appears to give permission to have ergonomic losses.	Consider rewording.	Accepted. Reworded		BP America, Inc

145	Bob Eisenmann	AffirmativeWith Comment	Annex M	M.2.4.6	Editorial	This clause has a shall in this informative annex.	Change the word 'shall' in this informative Annex.	Accepted. Reworded		BP America, Inc
144	Bob Eisenmann	AffirmativeWith Comment	Annex M	M.2.4.7	Editorial	Use of 'may' seems inappropriate for an informative annex in a standard.	Re-word.	Accepted. Reworded		BP America, Inc
10	Bob Eisenmann	AffirmativeWith Comment	3	Missing	General	OK limits needs a definition. It is used for requiriements.	Define 'OK limits'	Accepted. Added definition		BP America, Inc
146	Bob Eisenmann	AffirmativeWith Comment	Annex N	N.4.1	General	The mode shape diagrams (bottom three panes) indicate the relative angle of twist across the model elements. The higher the slope of this line, the greater the change in twist.This is only true if the geometry (lengththis could be misleading, since this is a sketch and not a scaled drawing. Additionally, some of the diagrams indicate the relative angle and others diagrams may show the speed referenced angle instead of a geometrically consistent angle. Ther diagram in figure N.4 does not show a discontinutiy across the gear element across a gear element; so, it may be a speed referenced diagram that does not reflect angles equally across the gear element. Care must be taken to interpret these diagrams properly.	Reconsider the wording.	Not Accepted. These diagrams are to scaled diagram in length. The angles are scaled to reflect the relative twist of each mode with 1 be the max twist,angles are never speed referenced - unlike the polar momentum of inertia.		BP America, Inc
9	Brian Howard	NonVoter	3	n/a	Editorial	Should include a definition of Digital Communication	Digital communication Digital communication is used to send and receive processed data. This can include Status, measurements, configured properties such as alarm levels and full scale ranges etc. A common protocol is Modbus among many available from different OEMs.	Not Accepted. Commonly understood term.		Bently Nevada Corporation
149	Bob Eisenmann	AffirmativeWith Comment	Annex O	O.2.4	Editorial	Rather than just being part of the title for O2.4, the scope, i.e. what is included, should be part of the requirement, since this can be normative.	Add text to clarify to what this applies.	Accepted in principle. Added subitem		BP America, Inc
					Ad-hoc	Free-running power turbine addition to Annex O? Check equations?	Resolved; removed gas turbine section	Accepted in Principle. Task force restructured paragraphs		
148	Bob Eisenmann	AffirmativeWith Comment	Annex O	O.3	Editorial	Rather than just being part of the title, the scope, i.e. what is included, should be part of the requirement, since this can be normative.	Add text to clarify to what this applies.	Accepted in principle. Section to be revised.		BP America, Inc
150	Bob Eisenmann	AffirmativeWith Comment	Annex P	P.4.2.1	General	This requires that static pressure transducers not be used. A better requiremetn would be a positive statemetn of what is required of a dynamic transducer.	Give requirements for the transducer.	Noted. Deferred to next edition		BP America, Inc
151	Bob Eisenmann	AffirmativeWith Comment	Annex P	P.4.4.1.3	General	This gives the frequency range to monitor. A better engineering requirement would have minimum frequency response requirements, pass band tolerance, e.g. in dB or percent.	Add a more precise and measurable requirement inlcuding frequency response, e.g. 'Vibration monitored shall have a minimum range of 0.5 running speed frequency to 20X running speed frequency with an accuracy of +- x%.	Not Accepted. This is a configured value.		BP America, Inc

17	Bob Eisenmann	AffirmativeWith Comment	6	Table 1	Technical	The operating range for cables is listed as 65 degrees C. Since these components can see similar temperatures as the probes they need to have similar temperature ranges. This fact was required In API 670 1st edition, i.e. having the same temerature range (clause 2.2 of API 670-1). The max temperature is not practical for many operating machines.	Review the temperature limits for extension cables in Table 1 and update to practical and technically achievable values.	Accepted. Updated Table 1		BP America, Inc
18	Bob Eisenmann	AffirmativeWith Comment	6	Table 1 and elsewhere	General	Accelerometer calibration is given as mV/g, and the temperature range for calibration is unfit for high temperature applications. Is the standard limiting accelerometers to having integral electronic conditioning and excluding higher temperature applications?	Somewhere specify whether the standard appllies to other types of accelerometers.	Not Accepted. Application to narrow.		BP America, Inc
147	Bob Eisenmann	AffirmativeWith Comment	Annex N	Table N.1	Technical	Magnetostrictive torsional vibration probe and cable and interface module (all are together for the last two columns-- gives an average scale factor tolerance and a frequency response requirement. Since the transducer measures static and dynamic values, this should be clarified. A 3dB error in the frequency response is also a 3dB error in the measurement. How can this be distinguished from the 10% requirement on scale factor.	Clarify, is the average scale factor just for the d.c. portion or other?	Accepted. Updated Table N.1		BP America, Inc
129	Bob Eisenmann	AffirmativeWith Comment	Annex E	Title	Editorial	This Annex is marked as normative. The title should not indicate that these are considerations but rather requirements.	Consider changing the title to reflect that this annex is normative.	Accepted. Changed title to "...detection requirements"		BP America, Inc
134	Bob Eisenmann	AffirmativeWith Comment	Annex H	Various	General	Annex H is listed as informative, but it has 'shall' requirements.	Change the word 'shall' in this informative Annex.	Accepted. Updated text to remove shall.		BP America, Inc