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Committee Comments on Draft				OIML TC 8/SC 6/P01/ NO12	
CIML Member comments on: OIML TC 8/SC 6/P01/ NO12/1WD		First Working Draft: 1 WD OIML R 81-1 and -2	Title: <i>Dynamic measuring devices and systems for cryogenic liquids - Part 1: Metrological and technical requirements</i> <i>Part 2: Metrological controls and performance tests</i>	Project: p1 : revision of the 1998 R 81 <i>Dynamic measuring devices and systems for cryogenic liquids</i>	
WD date: 20 May 2013		Circulation date: 20 May 2013	Closing date for comments: 30 September 2013		
Secretariat: US Ms. Juana Williams					
Country Code	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
1WD OIML R 81-1					
FR	All	edit.	The text is not in a “justified mode”.		Paragraph alignment “justified”
FR	All	gen.	It would be more practical to have definitions similar to R117-1 (example : the units).		Please indicate specific clauses by their alphanumeric designation that are more practical and which are less practical
AU	All	gen. edit.	Throughout the document the term “volume” is generally used to refer to the quantity of liquid being measured. However, the quantity could equally be measured and indicated in terms of mass, as clause 5.1 currently allows.	It is proposed that the term “quantity” is used to describe the measurand, rather than “volume” or “mass”. Such changes should be applied appropriately throughout the document.	Agreed the term quantity replaces the term volume where appropriate
AT		gen.	For “normal” measuring systems R117 applies. Cryogenic liquids have some peculiarities apart from the normal measuring systems of R117, which justify a stand-alone Rec, but R81 should be as far as possible congruent with R117 (as the leading Rec) without re-inventing the wheel. So all requirements on cryogenic measuring systems which are not special for cryogenics should be harmonized with R117-1 and should appear in the same order as in R117-1. Requirements on testing should be harmonized with the recent draft R117-2.	<u>Use the same text as in R117-1 and in draft R117-2 for items of R81 which are identical with R117.</u>	Requirements are structured according to the template format, please specify what should change in the order
NL	2 / 3	gen.	We do not have the impression that gas elimination devices in cryogenic systems exist.	Delete all references to gas elimination devices.	See 7.1.9.1 “...In the case that neither air intake nor gas release will occur in the liquid upstream of the meter, a gas elimination device is not required.”

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NL ¹	2 / 3	gen.	In our view R 81 is not intended for direct sales to the public. Especially since LNG is excluded from the scope of the document.	Delete 3.13 / 3.1.6 / 3.1.16 / 3.1.17 And add a sentence that all direct sales to the public and fueling of vehicles is covered by R117.	U.S. stations were initially planned for liquid hydrogen dispensers, but compressed gaseous hydrogen is more prevalent for vehicle refuelling. A limited number of stations are beginning to open to the public.
AU	2.1	edit.	In the 2 nd Paragraph, 2 nd sentence, include “flow” immediately before “...measurements of cryogenic liquids...”.		Agreed
AU	2.2	gen./ techn.	NMI Australia has received a submission from an Australian industry stakeholder, Gas Energy Australia (GEA), regarding the proposal in the Working Draft to exclude LNG systems from the scope of OIML R 81. In Australia, LNG systems are currently pattern approved in accordance with the 1998 edition of OIML R 81. GEA are aware of efforts to include requirements for LNG systems into OIML R 117.	<p>Gas Energy Australia Letter accompanying email for consideration.</p> <p>By excluding LNG from the R81 standard, the following flow-on effects have been identified;</p> <p>a. The exclusion would mean that no metrology standard would include guidance on the traceability requirements for the fiscal transfer of LNG to achieve NMI Pattern Approval. There are automotive refuelling stations and bulk storage facilities currently under construction which will be affected.</p> <p>b. This exclusion will also significantly impact the performance of NMI verification personnel where the mandatory compliance process and procedures are not defined.</p> <p>c. The exclusion would mean there would be no legal means by which to perform custody transfer of LNG. The current LNG industry is trading around \$200M of product per annum which this expected to double over the next five years.</p> <p>By including LNG into the R117 standard, the following flow-on effects have been identified;</p> <p>a. The majority of the requirements of R81 pertaining to the measurement of cryogenic liquids will need to be repeated in R117 to make this standard applicable for LNG. Specifically testing requirements for cryogenic LNG will need to be developed. It is impractical to measure the density of a boiling liquid in the same way the density of the saturated liquid is measured for verification purposes.</p> <p>b. LNG is a cryogenic liquid, therefore it becomes counter intuitive to specifically exclude this from the appropriate cryogenic standard (R81) as the physical properties, product characteristics and safe handling procedures are consistent with the products listed in the R81</p>	<p>Comment distributed to R 117 Convener</p> <p>In accordance with CIML Resolution No. 2014/16 approving a new project in TC8/SC3; the revision of all parts of R 117 Dynamic measuring systems for liquids other than water, to include requirements and test procedures for measuring systems for liquefied natural gas (LNG) in proposed new Annex L.</p>

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				<p>revised version.</p> <p>Conclusion</p> <p>Metrology is a key consideration in the future development and growth of the LNG industry. The industry cannot progress without a robust metrology standard. Gas Energy Australia and the National Measurement Institute should work together to revitalise R81 to achieve a standard which is accurate and dependable, and which allows the industry to deploy readily.</p> <p>Recommendation</p> <p>Gas Energy Australia recommends that the National Measurement Institute revisit the proposed exclusion of Liquefied Natural Gas (LNG) from the R81 standard and work with Gas Energy Australia to revise R81 to a level which will accommodate LNG appropriately rather than shifting the requirements into an alternate Standard R117 Dynamic measuring systems for liquids other than water.</p>	
China	2.2		2.2 Nonapplicable Devices and Systems measuring systems used for the measurement of liquefied natural gas.	This recommendation should used for the measurement of liquefied natural gas.	In accordance with CIML Resolution No. 2014/16 approving a new project in TC8/SC3; the revision of all parts of R 117 Dynamic measuring systems for liquids other than water, to include requirements and test procedures for measuring systems for liquefied natural gas (LNG) in proposed new Annex L.
ES	2.2	techn.	I have not been involve in the process of revision and I wonder why LNG is now out of scope, is it in another OIML recommendation?	Just clarification.	In accordance with CIML Resolution No. 2014/16 approving a new project in TC8/SC3; the revision of all parts of R 117 Dynamic measuring systems for liquids other than water, to include requirements and test procedures for measuring systems for liquefied natural gas (LNG) in proposed new Annex L.
UK			<p>There is a slow; but growing interest, in dispensers for LNG.</p> <p>Certainly it is likely to become a hot topic before R81 can be reviewed again.</p> <p>With this in mind, I have one generic request for changes to R81, and for once am not supplying a precise proposal for alternative text.</p> <p>Quite simply the EMC performance requirements for the calculator in R81 do not match those in R117.</p> <p>At a recent review of R137 for CNG, I was able to convince the OIML committee that the R137</p>		<p>Comment distributed to R 117 Convener</p> <p>In accordance with CIML Resolution No. 2014/16 approving a new project in TC8/SC3; the revision of all parts of R 117 Dynamic measuring systems for liquids other than water, to include requirements and test procedures for measuring systems for liquefied natural gas (LNG) in proposed new Annex L.</p> <p>U.S. stations were initially planned for liquid hydrogen dispensers, but compressed gaseous hydrogen is more prevalent for vehicle refuelling. A limited number of stations are</p>

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			and R117 requirements should be aligned. So I am looking for a similar approach on R81. I can imagine within 5 years having a combined LNG + CNG + diesel fuel dispenser, with a single calculator. Potentially for use by the general public (light industrial E1 use).		beginning to open to the public.
AT	3.1	gen.	- Besides special definitions for cryogenics (e.g. boiling point), it is strongly recommended to use the definitions of R117-1. - Furthermore, the definitions of Annex A should be listed in R81 in a common chapter together with the above mentioned definitions. - Redundant definitions like in 6.1.11 and in A.4.11 and A.4.22 should be avoided.	- For the definition of faults and significant faults and for their magnitude, follow R117-1 (magnitude: see R117-1, 2.5.4).	6.1.11 modified to specify the MPE for a significant fault
AT	3.1.2		Communication devices are listed as ancillary devices although communication devices do not appear in the doc nowhere else.	delete	Communication devices removed from clause 3.1.2
FR	3.1.4	techn.	“For example, the base temperature and the base temperature pressure.” Different from R117 definition.	“For example, the base temperature and the base pressure of the liquid.”	Text modified to reflect proposed change and align with R 117
FR	3.1.9	edit.	For the traceability of the master meter, precise “national or international standards”		Added the text “...or international...”
AT	3.2.1	edit.	What should be defined here ? Measuring devices or measuring systems ?	For measuring devices copy T.m.1 from R117-1, For measuring systems copy T.m.2 from R117-1.	Measuring systems are defined. Title and text were modified to define a system
NL	3.2.2	gen.	See NL ¹ above Dispensers for fueling vehicles should do not need to be defined, while these are covered by R117	Delete this definition	The dispensing systems for refuelling vehicles instrument category deleted, but can be revisited. U.S. stations were initially planned for liquid hydrogen dispensers, but compressed gaseous hydrogen is more prevalent for vehicle refuelling. A limited number of stations are beginning to open to the public.
AT	3.3.1	edit.	Air eliminator	better: “gas elimination device”	Agreed. Renumbered to 3.3.4 and Modified so that air eliminator becomes <u>gas elimination device</u> .
CA	3.3.3	edit.	Clause does not make sense with word Volume removed. As written the conversion device converts the liquid, not the indicated quantity.	Add the word quantity where volume was removed	Renumbered to 3.3.2 and Modified the text to clarify: (1) that it is the quantity at the time of measurement rather than just the liquid corrected and it is the liquid’s characteristics that are the source for corrections; and (2) the expression of the relationship of the conversion

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					factor to align with text in R 117
AU	3.3.3	edit.	The definition should read: A device that automatically converts the quantity of cryogenic liquid measured at metering conditions into a quantity at base conditions...		Renumbered to 3.3.2 and Modified the text to clarify: (1) that it is the quantity at the time of measurement rather than just the liquid corrected and it is the liquid's characteristics that are the source for corrections; and (2) the expression of the relationship of the conversion factor to align with text in R 117
AT	3.3.5	edit.	Measurement transducer not defined	follow the concept of R117-1 by separating the meter into a sensor, a transducer and a calculator.	Added Clause 3.3.8 to define Transducer and the device is also included as part of a meter in Figure 1 Constituents of a typical measuring system
AU	3.4.1	edit.	The term “liquid meter” is redundant. In addition, the term defined in 3.3.5 is “meter”.	Delete the word “liquid” that appears immediately before the word “meter”.	Agreed
AU	3.4.2	edit.	The term “liquid meter” is redundant.	Delete the word “liquid” that appears immediately before the word “meter”.	Agreed
AU	3.4.3	edit.	The term “liquid meter” is redundant.	Delete the word “liquid” that appears immediately before the word “meter”.	Agreed
NL	4	edit.	For clarification a figure similar to R139 could be shown with the extensive explanation of all parts in a measuring system.	Insert the figure.	Added Figure 1 Constituents of a typical cryogenic measuring system
AU	4.1	edit.	The section heading is very long. Perhaps a carriage return should be inserted before the sentence beginning “Typically...”?		Agreed
CA	4.2.1	techn.	Why is a non-resettable totalizing counter required on all meters?	Remove non-resettable totalizing counter	Removed Nonresettable totalizing counter from 4.2.1
AT	4.2.1	edit.	It is not understandable why a non resettable totalizing counter should be a mandatory part of a meter.	with regard to the parts of a meter, 4.2.1 should follow the concept of R17-1, T.m.3.	Removed Nonresettable totalizing counter from 4.2.1
FR	4.2.2	edit.	Include the conversion device		Added Conversion device to 4.2.2
NL	4.2.3	edit.	“A meter itself is not a measuring system.” Such a statement could raise a lot of discussions since a meter can be almost (!) a complete system.	Delete the sub clause	Agreed deleted 4.2.3
PL	4.3.1	edit. techn.	A vehicle refueling dispenser is a measuring system. It's not in line with point 4.1.1	Add in point 4.3.1 “hydraulic path” or “proper lines, hoses etc”	Text “proper valves, hoses, lines,” added to 4.3.1
NL	4.4.1	edit.	“Roughly the same” is not well defined	Please insert the phrases from R117 concerning the family of meter approach with the size selection pyramid and limitations in Qmax/Qmin ratio.	Modified text to clarify the relationship of Qmax for all members of a family based on R 117 Clause 5.1 Meter selection – family of meters
AU	4.4.1	techn.	What is meant by the phrase “geometric similarity”? Is it to be interpreted as that the geometric ratios of the design of the measuring part/element of differently sizes meters/systems shall be the same within a family? That is, those	Please provide some clarification.	The design of the measuring parts follow the same numerical concepts and the same properties and relationships from a geometric standpoint

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			is in R 117		
NL	6.3	techn.	When class 1.5 is added also applicable MPE's are to be added.		Under consideration should there be future drafts
AT	6.3	techn.	MPEs are stated for type approval only.	follow the concept of R117-1, 2.6, stating MPEs <ul style="list-style-type: none"> - for the complete measuring system, for type approval, initial verification, subsequent verification (2.6.1), - type approval of the meter, and verification of the meter before the initial verification of the measuring system (2.6.2). 	Modified so that MPEs also apply for initial verification and subsequent verification
PR	6.3.1		6.3.1 For type approval of a measuring system, the MPE is ± 2.5 % of the measured quantity. (6.1)	For type approval of a measuring system, the MPE is ± 2.0 % of the measured quantity.	Modified so that MPEs also apply for initial verification and subsequent verification. MPEs are not more stringent, but the MPE is the same for these systems as in the 1998 draft
PR	6.3.2		6.3.2 For type approval of a meter (3.3.5), the MPE is ± 1.5 % of the measured quantity.	For type approval of a meter (3.3.5), the MPE is ± 1.0 % of the measured quantity.	Modified so that MPEs also apply before the initial verification and subsequent verification of the system. MPEs are not more stringent, but are the same as in the 1998 draft
FR	6.3.3	edit.	6.3.4 to 6.3.9 are declination to 6.3.3	Replace (6.3.4 to 6.3.9) by (6.3.3.1 to 6.3.3.6), or delete numbering.	Agreed. Renumbered
AU	6.3.3	edit.	Please consider rearranging the clause as the layout is potentially confusing.	A suggestion is as follows: The MPEs for the type approval of components are specified in clauses 6.3.4 to 6.3.9. These MPEs are applicable after increasing and decreasing the measurand (hysteresis).	Rearranged text and renumbered subclauses 6.3.4. through 6.3.9. to read 6.3.3.1 through 6.3.3.6
At	6.3.3	edit.		It should be stated in 6.3.3, that the sensors mentioned in 6.3.4, 6.3.5, 6.3.6 are parts of the conversion device (which can be tested separately).	Is the confusion about the sensors or is it that the conversion device can be tested separately as stated in 13.1.1 Units submitted to type test states; "...electronic devices shall be submitted separately to tests..." or 13.9.3 Type approval of a conversion device; When a conversion device is submitted for a separate type approval, and 13.9.3.2 Electronic conversion device; "to verify...6.3.3.3" OR is the document more user friendly if 13.1.1 and 13.9.3 are concisely stated in 6.3.3?
FR	6.3.4	edit.	The temperature unit is in Kelvin, which seems not coherent with OIML R117-1 where the unit is in °C.	Change K by °C.	Modified temperature unit to be expressed in terms of °C
AT	6.3.4 6.3.5 6.3.6	techn.	If we follow the concept of modular type approval then its essential to define what is meant by "sensor". (From the indicated MPEs) I suppose that the "sensors" are associated measuring instruments	"sensor" should be better defined as "associated measuring instrument (device)".	Sensor defined in clause 3.3.10

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			(devices) being parts of the conversion device, and their MPEs apply to the indication of the characteristic quantities of the liquid when displayed by the conversion device or by the calculator (containing the conversion device). Furthermore, associated measuring instruments consist of an associated measuring sensor (AMS) and of an associated measuring transducer (AMT); when stating MPEs also for such sub-parts, the concept of R117-1, 2.7.2 can be followed.	make also a concept for the modular approval of associated measuring sensors and of associated measuring transducers by stating MPEs for these sub-parts according to the concept of R117-1, 2.7.2 (“second approach”).	
FR	6.3.6	edit.	m3	m ³	Superscripted text which should appear in print and on screen, perhaps this occurs in some printed documents due to printer font definition?
AT	6.3.7	techn.	It is the R117-concept that the MPE of the meter (and this applies also for a measuring device ≡ measurement transducer in R81) is 3/5 of the MPE of the measuring system. So the MPE of the cryogenic transducer could be 1,5 %. Even if one does not follow this R117-concept, a MPE > 1 % could be provided anyway: acc. to the definition in 3.3.5, the meter consists of (more or less) the measurement transducer and the calculator. So when the MPE of the meter is 1,5 % and the MPE of the calculator is 0,25 % , the MPE of the transducer could be 1,25 % (in the case of a linear addition, and even > 1,25 % in the case of a geometric addition of MPEs).	set the MPE of transducer to 1,5 % or at least to 1,25 %.	MPEs are the same as in the draft the 1 WD superseded
AT	6.3.9	techn.		it should be stated that in the case of a converted indication the MPEs are as in 6.3.1	Added new subclause 6.3.3.6.1 to clarify the MPE that applies to the converted quantity indication
PR	6.3.10		6.3.10 For initial or subsequent verification of a measuring system under in-service conditions, the MPE is ± 2.5 % of the measured quantity. (6.4)	For initial or subsequent verification of a measuring system under in-service conditions, the MPE is ± 2.0 % of the measured quantity.(6.4)	MPEs are not more stringent, but are the same as in the 1998 document. MPE under in-service conditions is not more stringent than type evaluation
PL	6.3.11	edit. techn.	Emergency power supply device shall not influence the measurement results.	Cross out point 6.3.11	Deleted Clause 6.3.11 Emergency power supply device
CA	6.3.11	techn.	Emergency Power Supply Device is not defined. It is not clear what the “second case” is referring to. Is this section increasing the tolerance by 5% when a failure of the main power supply occurs? Is an Emergency Power Supply Device required?	Section needs to be written so the requirement is understood	Deleted Clause 6.3.11 Emergency power supply device
AT	6.3.11	techn.	“ in the second case” does not make sense. The concept of stating an additional MPE for the power supply comes from R117 (1995) , but is	bring R81 in line with R17-1, 4.2	Deleted Clause 6.3.11 Emergency power supply device

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			not contained in R117-1 any more.		
AT	6.3.12.1	edit.	The headline of 6.3.12.1 is “automatic”, but the text refers to any kind of correction be it automatic or non-automatic	delete “automatic” in the headline	Text specifies an application that does not apply to the device. The intent is that the device operates during the measurement without operator intervention to make corrections by taking into account certain characteristics of the actual liquid. The device is not for use to correct an approximation such as a pre-estimated drift.
CA	6.5	techn.	Are notified bodies able to apportion errors in any ratio they choose? How is an error applied to a software module? Subsections of 6.3 apportion the errors for the actual components, so it is not clear why further apportioning is required for modules?	Remove the section.	6.5 deleted. Subsequent clauses 6.6 through 6.14 renumbered 6.5 through 6.13.
AT	6.5	techn.		use “component” / “sub-system” instead of “module”, for all parts of R81.	6.5 deleted. Subsequent clauses 6.6 through 6.14 renumbered 6.5 through 6.13.
CA	6.6	techn.	“Constant or dynamic flow” does not imply that the runs need to be carried out in approximately the same flow pattern to be comparable.	Change the wording to require the runs of a repeatability test to be conducted in a similar manner in order to compare the results.	Modified to clarify repeated measurements are conducted under similar conditions to include the same flow rate
PL	6.7	edit. techn.	Point 6.7 is not in line with point 7.2. This is not clear.	Unify the requirements	Modified 6.7 (now 6.6) to align with 7.2
AT	6.7	techn.	MPE is missing for price indications/printouts.		Modified text “...no difference between the indications of multiple indicating or printing devices.”
AT	6.8	techn.	(Above 2 * MMQ) the MPE of measuring systems for liquids other than water is a function of the delivered quantity, therefore from a certain delivered quantity onwards, any increase (decrease is not possible) linked to the MPE would produce a visible change of the display.	R117 went without “discrimination“ quite well , so it is doubtful why “discrimination” should appear here and tests for that are described under 13.4.2.1. But anyway, if it is really needed in R81, then increasing of the value should be linked to the MPE of MMQ	Discrimination deleted to align with R 117. Subsequent clauses 6.9 through 6.14 renumbered.
AT	6.9	edit.	“ ... two classes ... “	“ ... three classes ... “	Modified classes B, C, and I and their descriptions to reflect latest D 11(2013) classes of E, H, and M , respectively
PL	6.9	edit. techn.	Climatic and mechanical classes are not in line with actual version D11 – also with new project D11 (draft 3 2013)	Unify classes (M1-M3, H1-H3, etc)	Modified classes B, C, and I and their descriptions to reflect latest D 11(2013) classes of E, H, and M , respectively
FR	6.9	edit.	“Are divided into two classes”	“Are divided into three classes”	Modified classes B, C, and I and their descriptions to reflect latest D 11(2013) classes of E, H, and M , respectively
FR	6.9	techn.	Classes B, C and I quoted in OIML R117 (1995) have been replaced into OIML R117-1 (2007) by H, M and E classes. Couldn’t it be the same for OIML R81 ?	Use H, M and E classes	Modified classes B, C, and I and their descriptions to reflect latest D 11(2013) classes of E, H, and M , respectively
FR	6.10	edit.	For “ambient temperature“, there are 2 types of units : °C and K	Choose only the °C unit.	Modified temperature unit to be expressed in terms of °C

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AT	6.10	edit.	The R117-concept is (see R117, 2.3.3.3) that the minimum ratio between Qmax and Qmin refers to the <u>measuring system</u> . Although R81 specifies that that the ratio for the <u>meter</u> must at least 5, nothing is said in R81 about the mandatory minimum ratio of the measuring system.	state also that the ratio between Qmax and Qmin of the <u>measuring system</u> must be at least 5.	Modified to specify the relationship of Q _{max} to Qmin applies to the measuring system
AU	6.10.1	Gen.	These requirements are included elsewhere, specifically in 6.2.1.1, 6.2.1.2 and 6.2.1.3.	Consider deleting 6.10.1 and perhaps rewording 6.2.1.1 to 6.2.1.3 if needed.	Deleted this redundant clause since relationship of Q _{max} to Q _{min} is specified in 6.2. Subsequent clauses 6.10.2 through 6.10.2.4 renumbered
AU	6.11.1	Gen. edit.	This clause appears to be a definition.	Perhaps definitions of “fault” and “significant fault” and “interchangeable component” could be included in the terminology. The requirements relating to these concepts should be retained in this section.	Added fault and significant fault definitions to 3. Terminology. Clarified how the concept of significant fault applies in 6.11.1 (now renumbered to 6.9.1)
NL	6.11.1	techn.	The main part of this phrase is covered by the definition of significant fault. Moreover when the value (not the decision) is concerned the term “fault limit” is applicable. Furthermore the significant fault is not only applicable for initial verification	Suggest to add the definition of “fault limit” in the terminology and to amend 6.11.1 to: During verification the fault limit value is equal to the MPE Delete “on initial verification”	Fault limit included the text “on initial verification” deleted from clause
AT	6.11.1	techn.	- Besides special definitions for cryogenics (e.g. boiling point), it is strongly recommended to use the definitions of R117-1. - Furthermore, the definitions of Annex A should be listed in R81 in a common chapter together with the above mentioned definitions. - Redundant definitions like in 6.1.11 and in A.4.11 and A.4.22 should be avoided.	- For the definition of faults and significant faults and for their magnitude, follow R117-1 (magnitude: see R117-1, 2.5.4).	Added fault and significant fault definitions to 3. Terminology. Clarified how the concept of significant fault applies in 6.11.1 (now renumbered to 6.9.1)
AT	6.11.3	edit. techn.	In no case it is acceptable to substitute an analog component of a measuring system such as a meter by another one without re-verification of the measuring system.	delete 6.11.3	Modified to clarify either the disconnection or interchange of components must meet security/sealing parameters
AT	6.12	gen.	There are 2 lists, differentiating in “during” and “after” for some of the influence quantities. This differentiation is not understandable and not the concept of R117-1. It does not matter whether the instrument reacts directly during the disturbance or afterwards, as long as the significant fault is met.	either delete this concept or give in 6.12 an explanatory note	Text added to tables to clarify test method, required severity of the test, fault limits, and nature of influence quantity
AT	6.12.1	techn.	It may only be necessary to take mains frequency variation and power frequency magnetic fields	Make an adequate footnote at power frequency magnetic field and at ripple	New footnote added for row d) and m) that reads This test does not apply to instruments

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			into consideration when it is required by the present day characteristics of the mains power supply in this region where the instrument is used.		connected to battery charger systems incorporating switch mode converters
NL	6.12.1	techn.	a) Increase to 3 GHz to be in line with the OIML R 117, R 137 , R 139 and D 11	Replace 2 GHz by 3 GHz.	Modified \geq GHz to read 3 GHz to align with R 117, R 137, R 139, and D 11
FR	6.12.1 / 6.12.2	edit.	Add the titles of the chapters	6.12.1 Tests during the disturbances 6.12.2 Tests after the disturbances	Titles included for 6.10.1 and 6.10.2 Clauses renumbered as part of editing preceding text
AT	6.12.2	techn.	Item a) Damp heat, cyclic is not a disturbance.	Delete a)	See D 11:2013 Table 5 rather than R 81: 1998 B.4.3 for nature of the influence quantity
AT	6.12.2	techn.	Items b) to e) are questionable. In R117-1, which refers to the same instruments (except the liquid) such disturbances are not listed because they are not applicable there.	Delete b) to e)	Deleted b) water, c) sand and dust, and d) salt mist. Modified e) to specify test is vibration (random) rather than mechanical shock.
AT	6.12.4	edit.		1. State that when the meter type is supposed to be sensitive to flow disturbances, then flow disturbance testing must be carried out. 2. Regarding the MPE: Follow R117-1, A.6.4: the applicable maximum permissible errors are those fixed in line A of Table 2 for the measuring system; that would mean that the applicable maximum permissible error under flow disturbances for cryogenic meters is 2,5 %.	Clause modified to clarify that the MPEs specified in 6.3 apply to flow disturbance accuracy tests
AT	6.13	edit.	To which measurement result does the MPE refer ?	1. State that the MPE refers to the difference between the initial intrinsic error and the error after the endurance test. 2. Take for the MPE the concept of R117-1: the corresponding MPE is $\leq 3/5$ of the MPE of the measuring system, i.e for cryogenic liquids = 1,5 %.	Clause modified to clarify the MPE for a durability test is the difference between the measuring instrument's initial intrinsic error and the error after the endurance test.
NL	6.13	techn.	Add a sentence or a note in 6.13 to explain that the durability test is only applicable for meters with moving parts.	Add a sentence to stay in line with the R117	D 11 Annex B Durability assessment, B.1.2 <i>Verification of the instrument's capability to act adequately upon failure of a part or component</i> "...The applicable Recommendation may specify the parts that are to be tested. Special attention should be paid to parts (electronic or mechanic) for which properties may be expected to change gradually during the lifetime of the instrument."
AU	6.13	edit.	In the first sentence replace "...a flow of rate..." with "flowrate".		Restated text
NL	6.13.1		Why restricted to initial verification ? The durability concerns a general requirement. Part 1 therefore should only state the performance criterion (requirement) In Part 2 it	Delete "...on initial..."	Deleted "...on initial..."

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			shall be specified how the performance related to durability is to be tested during type evaluation and/or initial verification		
AU	6.13.1 and 6.13.2	edit.	These clauses appear to be definitions. Also, in 6.13.1 what does "...the magnitude of the MPE on initial..." refer to? Is it the initial test result, the MPEs at initial verification?	Move to terminology section and please clarify.	Deleted "...on initial..." Reworded to clarify what constitutes a significant durability error for the purposes of this Recommendation.
CA	6.13.1	edit. techn.	An error found during a durability test is still an error. A new category of error should not be created here.	Reword the section and refer to the "durability error" as an error occurring as a result of a durability test.	Reworded to clarify errors that occur as a result of the durability test and errors that result in a failure or invalid data values.
CA	6.13.2	techn.	Durability tests are only done as part of the approval process. If the test results in any of the conditions noted the meter should be deemed to have failed the durability test, or the test should be deemed invalid and be repeated .	Re word the section to clarify that the device still fails the test if any of the list outcomes occurs.	Reworded to clarify errors that occur as a result of the durability test and errors that result in a failure or invalid data values.
AT	7.1	techn.	Requirements for conversion devices are missing.	Copy the applicable requirements from R117-1, 3.7	See clause 7.1.11
FR	7.1.2	edit.	The cryogenic systems have some valves for the delivery and the operation of security (pressure, temperature of the liquid)	Include the description of the R117-1 § 2.16	See clause 7.1.2.3
CA	7.1.2.1	techn.	How is it determined if a vapour return line is "needed". If the pump is properly sized a system should be able to deliver without a vapour return line up to the point where the pressure relief valves open.	Eliminate the " unless necessary to complete a delivery" section and add an option to use a vapour return line as per the next comment.	Deleted text " unless necessary to complete a delivery "
CA	7.1.2.1	techn.	Is there any consideration to add the option to measure the vapour returned to storage and subtract it from the quantity delivered. Meter technology has advanced to the point where this is becoming possible.	Add the option to use a vapour return line provided the vapour is measured. See R 117 2007, section 5.4.5 for wording.	What about the wording in R 117-1 clause 5.4.9 that addresses a connection between the vehicle delivery tank and receiving tank? Would this be an ancillary device subject to legal metrology control?
CA	7.1.2.1	techn.	If a section to allow vapour return lines is added, there should also be section to require some means to prevent liquid from passing back to storage via the line	Suggested wording – The flow of liquid between the delivery tank and the receiving tank through the vapour return line shall be securely prevented	What about the wording in R 117-1 clause 5.4.9 that addresses a connection between the vehicle delivery tank and receiving tank?
NL	7.1.2.5.1	techn.	This is different from the R117 zero flow / zero stability part.	Bring in line with the R117.	Text included to clarify that the requirement is not applicable to meters equipped with the low flow cut off feature
FR	7.1.5.4	techn.	The minimum specified quantity deviation is not defined in the OIML	Add a definition of the minimum specified quantity deviation	Added a new definition for the term minimum specified quantity deviation
AU	7.1.5.4	techn.	What is the minimum specified quantity deviation?	Please clarify.	Added a new definition for the term minimum specified quantity deviation
PL	7.1.8	edit.	The meter measures mass or volume.	"This implies (...) is applicable to the corrected quantity."	Text modified to read quantity values rather than mass
AT	7.1.8, 1 st paragraph,	edit.		" ...is applicable to the corrected <u>mass</u> " should better read: " ...is applicable to the corrected	Text modified to read quantity values rather than mass

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	2 nd sentence			<u>quantity values</u> ”	
AT	7.1.8, 2 nd paragraph, 2 nd sentence	edit.		“The use of this device for <u>adjusting</u> the errors ...” should better read: ““The use of this device for <u>correcting</u> the errors ...”	Text modified to read improving rather than adjusting
AT	7.1.9	gen.	Tests for gas elimination devices are missing.	define such tests	Technical requirements expanded
AU	7.1.9.1	edit.	In the 2 nd paragraph, first senesce, replace “measuring” with “measurement”.		Agreed measuring changed to measurement
AT	7.1.9.3	techn.	A gas separator, which copes with any amount of gas and thus makes a anti-swirl device unnecessary, is defined by R117-1, but not by R81.	Add anti-swirl device to the definitions. To be sure that the gas elimination device works properly, require anti-swirl devices anyway, when the measuring systems are used in that way that the tank normally may get empty.	Text included to clarify the design and intent of the anti-swirl device
AT	7.2	techn.	“... there shall be no difference between the indications of multiple indicating or printing devices.”: It is not required by R81 that the indicating devices are only digital (see 7.2.3) which would justify no difference.	For digital devices (indicating, printing) : no difference. In the case where indicating devices are also analog: Same MPEs like in R117-1.	Clarity and agreement of like indications for the identical transaction
NL	7.2.1	techn.	“The continuous display...” This is applicable except for the 7.1.5.3. described situation	Add this exception.	This is a separate quantity indication from the preset device quantity indication
AT	7.2.1 7.2.3	techn.	A requirement on non-significant minimum increments like in R117-1, 3.2.1.3 is missing. A requirement on admissible scale intervals like in R117-1, 3.2.1.4 is missing (7.2.3. “The scale interval shall be conveniently read” gives rise to discussions during patter approval. Requirements on price indicating devices like in R117-1, 3.3 are missing.	add	During the transaction: Conveniently readable from a reasonable customer and user position so that each category of either main, intermediate, or subordinate scale intervals/graduations has separate uniform characters, but also has sufficient variation in length width and contrast from the display background so that their value is clearly understood and distinguishable from each other and there is sufficient interval between each so as to avoid any confusion about their meaning and value
AT	7.2.1.4	edit.	“...the data transmission from the instruments to the printing device shall ...”: “and/or to the data storage” is missing	correct	This is specified in 7.9.4 and 7.10
AU	7.2.3	edit.	What is meant by the phrase “The scale interval shall be conveniently read”?	Please clarify.	During the transaction: Conveniently readable from a reasonable customer and user position so that each category of either main, intermediate, or subordinate scale intervals/graduations has separate uniform characters, but also has sufficient variation in length width and contrast from the display background so that their value is clearly understood and distinguishable from each other and there is sufficient interval between each so as to avoid any confusion about their meaning

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		techn.	complying with 7.8, which shall be approved under MID by the applicable SW-Guide 7.2 (which is to some extent not in compliance with D31).	admissible.	Software Guide What is the exact nature of your technical recommendation?
NL	7.8	techn.	<i>“This version number shall be updated by the manufacturer in the case of a software change that may affect the functions and accuracy of the measuring device.”</i>	Delete “....that may affect the functions and accuracy of the measuring device”	Text deleted as recommended.
FR	7.8	edit.	The year of publication of D31 should not be mentioned (if evolution in the future).	OIML D31.	Deleted reference to publication/draft year of the standard. Documents cited or cross referenced as the source for a requirement can be concurrently in some stage of revision
PR	7.8.2.1.2		7.8.2.1.2 Separation of software parts (New)	software interface should be prohibited to permit modification of the ratio between the indicated quantity and the actual quantity of liquid passing through the meter.	Clause 7.3.1.1 recognizes such an adjustment
FR	7.8.9	techn.	The evolution of the legally relevant software which doesn’t distinguish the metrological part from the others parts must be considered as a modification of the cryogenic meter even if the change doesn’t affect the metrological relevant function of the meter.		What “evolution”, would this be the development of the software by the manufacturer’s programmer? Agree if the manufacturer made no separation of software then any change to the nonrelevant software warrants review to determine that the legally relevant functions were not also affected. Text added to clarify the maintenance and/or reconfiguration does not warrant notice or reevaluation by regulators when these actions were taken on software sufficiently separated so that there is no influence on metrological functions.
CA	7.9.1	edit.	Treading should be trading	Correct spelling	Corrected spelling
FR	7.10	edit.	“conditions of clause 6.109” for which type approval has been granted	6. ?	Corrected references to related clauses
PL	7.10	edit.	There is no point 6.109 in the document.		Corrected references to related clauses
AT	8.2	edit. techn.	The requirements on printing devices are in 7.9.3. What is the difference between printing devices of 7.9.3 and of 8.2 ? If printing devices of 8.2 are not mandatory ones, the only thing one can require is that the interface of the measuring system is protective so that the external printer cannot influence the measuring system detrimentally.		See Clause 7.9.2 specifies the measurement results cannot be falsified (also see 7.10) or be printed if a significant fault or malfunction are detected Section 8 addresses inscriptions or the identification of various system components to include printers when the printing function is performed by an external device
AT	8.3	edit.	The marking of modules (= components / sub-systems) is done in R117-1, 2.19.2 in a much more simple way. It is not understandable why	use R117-1, 2.19.2	Marking are available for modules which type approval has been granted. However, accessibility may be an issue and in other cases

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			R81 should not work in the same way.		these markings are there for compatibility
AU	10.1.2.1	techn.	Unrestricted access to parameters that are integral to the determination of the measurement should not be allowed without subsequent verification of the system.		Access only does not imply a change to a parameter. Access is password protected and on return to use, security is in place and operation does not occur in the configuration mode. Local/national authority dictates procedures for ensuring traceability of the intervention and the process for subsequent verification when a metrological parameter is changed.
PR	10.1.2.1		10.1.2.1 When access to parameters that affect the determination of the results of a measurement is not protected by mechanical sealing means, the protection shall fulfill the following:	When access to parameters that affect the determination of the results of a measurement should be protected by mechanical sealing means.	Clause 10.1 recognizes both mechanical and electronic sealing as effective security means. Electronic features might be electronically sealed since this type of security provides an electronic record that contains more information about the parameter than a broken physical seal. Nothing prohibits a mechanical sealing mechanism.
PL	10.1.2.2	edit.	There is no point 9.1.4 in the document		Clause 9.1.4 deleted and replaced with a cross reference to clause 6.9.3
<p style="text-align: center;">1WD OIML R 81-2</p>					
PR				This recommendation should add the content of breakaway coupling valve in some liquid phase pipeline and gas phase pipeline.	Please provide your recommendation(s) for requirements and associated diagrams that address use of this feature for this application.
PR				The gas phase pipeline should also install the meter to measure the fluid.	Please provide your recommendation(s) for requirements and associated diagrams that address use of this feature for this application.
NL	12.3.1-12.3.2	edit.	These clauses are covered by 12.3	Delete these clauses	Clauses deleted to eliminate redundancy.
FR	13	edit.	15.1.10 doesn't exist	15.1 ?	Clause deleted and a cross reference to clause 13.9.6 was added to text
PL	13.2	edit. techn.	According to point 4.2 meter may be fitted with correction device, adjustment device.	Change the part of the text – “(...) meter fitted with correction devices...” to “meter fitted with components (integral devices)”	Modified
PL	13.4	edit. techn.	Severity levels are not in line with actual version D11 and with draft 3 (2013)	Unify classes with D11.	Modified classes B, C, and I and their descriptions to reflect latest D 11(2013) classes of E, H, and M , respectively
FR	13.4	gen.	(General) Why is 13.4 limited to “electronic measuring systems”?		Term “ electronic ” deleted
FR	13.4	techn.	Classes B, C and I quoted in OIML R117 (1995)	Use H, M and E classes	Modified classes B, C, and I and their

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			have been replaced into OIML R117-1 (2007) by H, M and E classes. Couldn't it be the same for OIML R81 ?		descriptions to reflect latest D 11(2013) classes of E, H, and M , respectively
NL	13.4	gen.	For a working draft it probably is a good approach to first implement the catalogue OIML D11 almost completely without making a more strict selection on test levels. OIML allows for a selection on applicable test levels to be made by the product committee and to be established as such for a product and not allowing for choice of a different test level. In the further drafting phase the first step should be to at least delete the non bold presented levels in the tables while these test levels are not suggested applicable for any instrument The note row in the tables refer to the selection to be made by the project group and is no more applicable after a selection on base of classes has been made by the project group. It is an instruction to the project group and not applicable for the body applying the Recommendation. Also the row "applicability" in the first place is an instruction to the Project Group. It may be useful to the body applying the Recommendation, but should be reviewed on the risk of producing confusion to the latter.	Delete non bold test levels and delete and the "Note" row	Guidance included in drafting the 1 CD for R 81
NL	13.4	techn.	Not all requirements from 6.10 – 6.12 seem to be covered by the tests mentioned in this sub clause	Some cross reference and review on applicability is needed	Cross referencing of clauses updated
FR	13.4	gen.	The tests ranking should be in the same order than the OIML R117-2 : climatic tests, mechanical tests, EM tests. For instance, it is strange to rank the "damp heat" test among the EM tests.	Reorder the tests as OIML R117-2, and following the order of the table page 63. Possibility to follow the R117-2 numbering ?	Placement of Damp heat now coincides with the order of tests in R 117-2. Please note that the template format does not include duplicate numbering of clause in parts I and II. A search or cross reference will result in conflicting text with the same alpha/numeric designation.
AT	13.4 General	edit.	"These tests are intended to ensure that <u>electronic</u> measuring systems ...": 13.4 is not restricted to electronic measuring systems only.	delete "electronic"	Term " electronic " deleted
AT	13.4	gen.	The arrangement of the chapters for the tests (accuracy tests – influence factor tests – disturbance tests) is confusing and needs re-arrangement.	Amend the structure in accordance with R117-1, Annex A	Further explanation about <i>what is</i> specifically confusing and the specifics of <i>what works</i> in R 117-1 to eliminate any confusion as well as <i>what arrangement</i> should be adhered to. How do you envision these documents will be used (e.g., stand alone, companion, etc.)?
AT	13.4	gen.	Accuracy tests on the electronic calculator are missing. Such tests are not defined by R81, 13.9.2.	Define such test	Tests added to 13.8.2
AT	13.4	gen.	Accuracy tests on the conversion devices are missing.	Define such test	Tests added to 13.8.3


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AT	13.4-table Severity levels	techn.	- DC power supply voltage variation is not a disturbance, but an influence factor (for which the MPE applies). - AC mains frequency and voltage of internal/external battery listed under 13.4.2 are missing in the table. - Some disturbances listed under 13.4.3 are missing in the table.	amend	-Nature of the influence quantity changed to Influence factor for DC power supply voltage variation in the severity level table
AT	13.4a)	edit.	Should be named as “Accuracy tests”.	amend	VIML 5.21 performance test test intended to verify whether the EUT is able to accomplish its intended functions. Subclause not modified.
NL	13.4.a	techn.	It is unclear which sizes of the meters are to be tested	Add the family of meter approach which the size selection.	Modified clause 13.1.1 to specify the Q_{max} of the unit tested in relation to the Q_{max} of a family of meters
NL	13.4.a)i	techn.	This clause is too vague.	Suggested to add the formula from R117 to calculate the flow rates.	Included ratio for calculating the number of flow rates for the test.
AT	13.4.a)ii	edit.	It should be stated that these tests refer to the measuring system.	amend	Added text “measuring system” and deleted EUT
AT	13.4.b)	edit.	- Headline has nothing to do with the tests. - Testing of MMQ necessary anyway, not only “if practical”	- amend - test MMQ at an intermediate flow rate, at least 3 test runs.	Clause title renamed
AT	13.4b),i	edit. techn.	- Headline too vague. - Text not complete.	- amend headline: “Influence factor tests and disturbance tests on electronic devices” - amend text: “These tests aim at verifying that the MS complies with the provisions of subclause 13.4.2 as regards influence quantities <u>and with subclause 13.4.3 as regards disturbances</u> ”	Clause title amended and text included to cross reference corresponding test requirements
AT	<u>13.4.c)ii</u>	techn.	- “The system shall be tested <u>with the liquid to be measured</u> ...” - “The EUT should be tested with <u>sufficient</u> liquid ..”: What does “sufficient” mean in the sense of the characteristics of the liquid ?	- Better: “The system shall be tested <u>with the liquid for which the measuring system is intended to be approved.</u> ” -Explain	Test should be carried out with the liquid that provides the most severe conditions
AT	13.4c), 13.4d)	edit.	Belong to the accuracy tests	re-arrange	Requirement is part of performance test.
AT	13.4e)	edit.	Belongs to the chapters concerning initial/subsequent verification	re-arrange	Deleted subclause and renumbered subsequent subclauses. Moved text to 12.1.
PL	13.4f)	edit. techn.	What is the reason, that simulated inputs are not permitted during the test (13.4.2.5 AC mains frequency variation)?	Cross out “13.4.2.5” from this clause.	Strikethrough reference to 13.4.2.5
AT	13.4g)	edit. tech	It should be born in mind that preset can be performed either by a presetting-device as an	Prepare tests also for presetting-devices which are mounted directly on the measuring system.	Is this test procedure addressed in R 117-2 X.A-LPG-I.7.1.7?

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		n.	<p>ancillary device mounted directly on the measuring system (e.g. on the meter, on the fuel dispenser), or by a console (the expression “console” should be substituted by “SSD”) as a remote device of the fuel dispenser(s).</p> <p>MPE:</p> <ul style="list-style-type: none"> - For ancillary devices combined with the meter, the MPE on preset should be as in R117-1, 3.6.6 (which also covers the prepaid amount). - For SSDs (as covered by 13.4g) , the MPE on preset (pre-payment in attended and in unattended mode) should be as in R117-1, 5.10.2.2.1 resp. 5.10.3.3.2 (leading to the MPE of R117-1, 3.6.6). <p>In general, testing whether the preset value coincides with the indicated value (within the MPE) is a matter of stopping the flow at the right time. This depends on the characteristics of the (analog) closure mechanism and is a matter of wear and tear. So even in the case where the closure mechanism works properly during pattern evaluation, the closure mechanism in use might not.</p>	<p>Apply same MPE as in R117-1.</p> <p>The accuracy tests should be done during initial/subsequent verification, at Qmax. For mechanical indicating devices the maximum price per liter should be set, and for digital indicating devices price per liter does not matter.</p>	
AT	13.4.2	edit.	<p>“The type of measuring instrument is presumed ..., if it passes the tests (13.4.2.2 - 13.4.2.12)”</p> <p>→“The type of measuring instrument is presumed ..., if it passes the tests (13.4.2.2 - 13.4.2.7)”</p>	amend	Amended to read 13.4.2.4.2
AT	13.4.2.1		“At each of these test values a slow decrease or increase of the measurand, equivalent to the absolute value of the maximum permissible error, shall be applied.“:	See comment to 6.8.	Text deleted.
FR	13.4.2.2.1	edit.	<p>Test level : 1 / 3 / 3</p> <p>Temperature : 30 / 40 / 50</p>	<p>Test level : 1 / 2 / 3</p> <p>Temperature : 30 / 40 / 55</p>	Levels and temperatures modified to reflect D 11
FR	13.4.2.3	edit.	Applicability : the case is empty	Put a “/” if non applicable	Reads “General” and is random.
FR	13.4.2.3	techn.	<p>The mechanical test is “sinusoidal”, but listed as “random” in the table page 63.</p> <p>Moreover, the severity levels of the table p. 63 seems to be incoherent.</p>	Is the test random or sinusoidal ? And if sinusoidal, why is it different from R117-1 (random) ?	Test modified to reflect requirements for random rather than sinusoidal vibration
FR	13.4.2.5...	edit.	The new tests are not listed in the table page 63	Add the tests	Deleted no longer included as a requirement
FR	13.4.2.7	edit.	The box “Unom = 12 V” doesn’t cover A/B/C/D	Modify the box	Deleted no longer included as a requirement
AT	13.4.3.8	techn.	Damp heat, cyclic is listed under chapter “disturbances”, although being an influence factor (as denoted in the 13.4 – table severity levels).	amend	D 11:2013 Table 9

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			The EUT is first exposed to the damp heat and tested after recovery. For this test, the MPE and not the significant fault (as referenced to 6.11.1 in the text) applies.		
AT	13.4.3.12	edit.	“durability” is arranged in chapter “disturbance” (13.4.3), but durability is a matter of accuracy.	durability tests should be arranged in the chapter “accuracy tests”	Renumbered to become 13.4.4 a separate part of the performance tests.
NL	13.4.3.12	edit.	Minor editorial: <i>An durability test..</i>	<i>A durability test..</i>	Now reads “a”
NL	13.4.3.12	techn.	Only applicable for meters with moving parts.	Add a sentence that this test is only to be performed on meters with moving parts and only on the size where the largest effect is to be expected.	D 11 Annex B Durability assessment, B.1.2 <i>Verification of the instrument’s capability to act adequately upon failure of a part or component</i> “...The applicable Recommendation may specify the parts that are to be tested. Special attention should be paid to parts (electronic or mechanic) for which properties may be expected to change gradually during the lifetime of the instrument.”
NL	13.4.3.12a	techn.	Third bullet: “ <i>The durability test shall be conducted for 100 hours in one or several periods at a flowrate from 80 % Qmax to Qmax</i> ”	<i>The durability test shall preferably be conducted for 100 hours in one or several periods at a flowrate from 80 % Qmax to Qmax. If this is technically impossible at least the equivalent amount (100 hours at 80% Qmax) of liquid shall have been passed through the meter.</i>	Text modified to include guidance about an appropriate test site and recognize technical difficulties may require the recognition of the suggested alternative throughput quantity
NL	13.4.3.12a	edit.	Fourth bullet: “..., an accuracy test shall be conducted with the same quantity as above.	...an accuracy test shall be conducted with the same quantity as the accuracy test prior to the durability test.	Inserted suggested text.
NL	13.6	gen.	It is in our opinion that copying Basic Documents in Recommendations is not intended. At may even lead to confusion in case of revision of the Basic Document.	Delete this sub clause (and all its subs) concerning general OIML certification procedures	Deleted clause and subclauses.
AT	13.9	gen.	Nothing is specified on gas elimination devices	see R117-1, 6.1.6	Specified requirements added to new clause 13.8.5
AT	13.9.1	edit.	It should be specified where the required testing for the type approval is specified.	see R117-1, 6.1.5, together with Annex A.6 to A.7	
AT	13.9.2	edit.	It should be specified where the required testing for the type approval is specified.	see R117-1, 6.1.7, together with Annex A.8	All included in 13.8.2
AT	13.9.3	edit.	It should be specified where the required testing for the type approval is specified.	see R117-1, 6.1.8, together with Annex A.9	All included in 13.8.3
AT	13.9.4	edit.	The MPE given therein is only valid in the case where the scale intervals are the same. But the first sentence states that the EUT shall be compared with indications provided by an indicating device already approved having the same scale interval or a smaller one.	The MPE-criterion should rather be: “The indications provided by various devices shall not deviate one from another <u>by more than one scale interval or the greatest of the two scale intervals if they differ, except otherwise provided in the requirements for self service devices.</u> ”	Suggest a review of both clauses and note that a self-service application is not addressed in this draft. Acceptable when pulse derived from analog device.
AT	13.9.6	edit. techn.	unfinished	Should be brought in line with R117-1, 6.1.11.	See completed clause 13.8.7 now aligned with the requirements in R 117-1 6.1.11

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AT	14.1.1	gen.	Limiting the test procedure exactly to 2 stages is too restrictive. It could be more than 2 stages. Whatever are the number and location of the stages and whatever are the test means, it must be possible to conclude that the measuring system, installed at the site of use, fulfils all applicable requirements under rated operating conditions.	For the general considerations on initial verification and for the stages, copy R117-1, 6.2.1. It is very important to state in R81 what is said under R117-1, 6.2.1: “When, as part of an initial verification, verification of the meter is planned to be carried out with a liquid which differs from the liquid the meter is intended to measure, comparative tests with these two liquids shall also be carried out to determine the maximum permissible errors on this verification. It may be necessary to have several specimens of the type available. Applicable information shall be stated in the type approval certificate.”	A meter shall be tested with the liquid to be commercially measured except that, in a type evaluation nitrogen may be used. Is the statement “...Whatever are the number and location of the stages...” intended to mean that <i>no matter what</i> the number and location or <i>it does not matter what</i> ?
AT	14.1.1	techn.	“Initial verification of electronic systems shall include a procedure to verify the presence and correct operation of checking facilities by the use of test devices as specified in subclause 7.5.”: The functioning of the checking facilities is tested in the course of the type approval.	No need for such a test.	Text deleted.
FR	14.3	techn.	It would be necessary to precise that the tests must be performed with the requirements of the approval type.		Please clarify.
AT	14.3.1k)	techn.	It must be evaluated at type approval, but not at verification, that the protection measures against fraud are appropriate. These protection measures are then either implemented into an appropriate construction or met by an appropriate securing. So the protection measures are checked either in the course of checking the construction k) or checking the sealing n) (or both).	Delete k)	Deleted subclause k), subsequent subclause designations updated
AT	14.3.2	edit.	The sentence under 14.3.2 is a matter of course.	delete	Sentence deleted
AT	14.3.2.a)	techn.	Test of the gas elimination device is missing	It should be described under which circumstances the test of the gas elimination device should be done and if necessary, how it should be done. Maybe a note would be helpful that in the case of cryogenics when the supply tank runs empty the pump would break down in the presence of gas, which stops the delivery automatically (but I am not sure whether such an automatic stop arises in any case).	Must seek further input
AT	14.4	techn.	When determining the error curve at the verification really as in 13.4.2.1 (which refers to type approval) a lot of work has to be done which is not adequate at the stage of verification.	Carry out at least 4 test runs evenly spaced over the measurement range, with quantities $\geq 2^*$ MMQ, for each*) liquid, for which the measuring system is approved. *) Specify in 14.4, for which liquid groups (e.g.	A meter shall be tested with the liquid to be commercially measured except that, in a type evaluation nitrogen may be used.

Country Code	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
			law rules.	randomly...”	noted for countries <i>not</i> having a mandatory subsequent verification program
AT	15.3	gen.	It is not the business of legal metrology to test the security of the access to bank accounts, and furthermore, it is most questionable whether the proposed measures are real barriers against fraud.	Delete 15.3	Banking and other monetary regulations address many aspects of possible criminal activity. This test is to determine if the authorization for the transaction on a single account card remains active when the customer does not take delivery or there is a power outage.
AT	15.5	gen.		It should be stated that the manufacturer shall specify the environmental conditions and that the testing shall be in accordance with that.	
FR	Annex A	gen.	The terms definitions should not be written; the terms should just be linked to the definition in the other documents.		Is this a recommendation for the hyperlink of the text?
NL	Annex A	gen.	In the revision of the VIML most of the terms from ANNEX A were implemented, in case not covered by the VIM. A3 to A 6 need to be reviewed while in principle for definitions of terms reference should be made only to international vocabularies	See observations and suggestions in the further rows	Revised
NL	A.3	gen.	Authority (OIML D 9) In principle for definitions of terms reference should be made to international vocabularies. OIML D 9 is not a vocabulary. Furthermore the definition is not applicable to several locations in the draft where “authority” is applied. In many cases it need not concern a Public (Government or local Government) body, but simply a body (may even be private) authorized by law...	Apply VIML 2: 1.05 metrological authority and state that where applied “authority” concerns a “metrological authority”	Modified to reflect VIML1.05
NL	A.4	gen.	In principle for definitions of terms reference should be made to international vocabularies. OIML D 11 is not a vocabulary. Furthermore it is in principle not allowed (CIML 2011 resolution 24) to modify a definition.	Refer to the applicable terms in VIML 2 and try to restrict only to these terms. For only a few it may still be necessary to reference D11.	For definitions that are copied from the VIM see Annex A.1 For definitions that are copied from the VIML see Annex A.2
NL	A.4.22	techn.	The requirement 20 % of mpe is not stated in the definition in D11 nor is it allowed to make changes the definition of a term. Furthermore a definition is a general (universal) explanation of a term and should therefore not include a requirement.	Copy the modified/new definitions VIML 2: 5.13 and 5.14 And instead of modifying the definition, include in part 1 of the recommendation (metrological requirements part) a statement on the applicable fault limit value for the different phases in metrological control.	Revised
NL	A.5	gen.	In principle for definitions of terms reference should be made to international vocabularies OIML D 31 is not a vocabulary. Some of the definitions can now be found in the VIML 2.	Refer to VIML 2 6.05; 4.12; 6.06; 4.08; 4.10; 2.20; 2.21; 6.03	For definitions that are copied from the VIM see Annex A.1 For definitions that are copied from the VIML see Annex A.2
NL	A.6	gen.	In principle for definitions of terms reference	Refer to VIML 2 4.01; 4.02; 4.05 and 4.04 and	For definitions that are copied from the VIM

Country Code	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
			should be made to international vocabularies OIML B 3 is not a vocabulary. All the definitions can now be found in the VIML 2. Further it is not allowed (CIML 2011 resolution 24) and not needed to amend the VIML 2 definition.	adapt by changing "... in this Recommendation" to"..... in the relevant recommendation" in last 3 definitions.	see Annex A.1 For definitions that are copied from the VIML see Annex A.2
FR	Annex B	gen.	The NIST link for density may be problematic in the future if the link evolves, or if other countries develop their own databases.	Delete the link.	The cryogenic liquid density tables were drawn up from the computer program NIST Standard Reference Database 23 link. "The REFPROP "database" is actually a program and does not contain any experimental information, aside from the critical and triple points of the pure fluids. The program uses equations for the thermodynamic and transport properties to calculate the state points of the fluid or mixture. These equations are the most accurate equations available worldwide."
NL	Annex C	gen.	There is no need for an extensive abstract in the Bibliography. The information copied from OIML D 11 is only for help to the Project Group looking for applicability of tests and for the choice of test levels.	Delete most of the text in the abstracts column. purely Suggest further, as a service for those interested in some further information, to implement a URL´s to the applicable information concerning the referred standards on the websites of the international standardization organizations example (number and picture hyperlinked) IEC 60068-2-2 (2007-07) Ed. 5.0 Bilingual 	Most of the abstract text deleted and new links were added to each Standards and reference documents column