



AVIS D'APPROBATION

NOTICE OF APPROVAL

Issued by statutory authority of the Minister of Industry (styled Innovation, Science and Economic Development) for the following device model(s):

Délivré en vertu du pouvoir statutaire du ministre de l'Industrie (dénommé Innovation, Sciences et Développement économique) pour le(s) modèle(s) d'instrument suivant(s) :

TYPE D'APPAREIL

TYPE OF DEVICE

Transformateur de mesure: tension et courant

Instrument Transformer: Voltage and Current

APPLICANT / REQUÉRANT

Trench Limited
 1865 Clements Road
 Pickering Ontario
 L1W 3R8

MANUFACTURER / FABRICANT

Trench Limited
 1865 Clements Road
 Pickering Ontario
 L1W 3R8

MODEL(S) / MODÈLE(S)

IVOKTA 245

MANUFACTURER'S RATING / CLASSEMENT DU FABRICANT

Rated Current Ratio(s) / Rapport(s) de courant nominal(aux)	See "Rated Current Ratio" is Section 1 Voir « Rapport nominal de courant » dans la Partie 1
Rated Voltage Ratio(s) / Rapport(s) de tension nominal(aux)	See "Rated Voltage Ratio" is Section 1 Voir « Rapport nominal de tension » dans la Partie 1
Thermal Burden / Fardeau thermique	See "Thermal Burden" is Section 1 Voir « Fardeau thermique » dans la Partie 1
Frequency / Fréquence	60 Hz
Voltage Class / Catégorie de tension	See "Voltage Class" is Section 1 Voir « Catégorie de tension » dans la Partie 1

**Lightning Impulse Level / Le niveau de tenue
au choc de foudre**

1050 kV

NOTE : This approval applies only to meters, the design, composition, construction and performance of which are, in every material respect, identical to that described in the material submitted, and that are typified by samples submitted by the applicant for evaluation for approval in accordance with sections 13 and 14 of the *Electricity and Gas Inspection Regulations*. The following is a summary of the principal features only.

REMARQUE : Cette approbation ne vise que les compteurs dont la conception, la composition, la construction et le rendement sont identiques, en tout point, à ceux qui sont décrits dans la documentation reçue et pour lesquels des échantillons représentatifs ont été fournis par le requérant aux fins d'évaluation, conformément aux articles 13 et 14 du *Règlement sur l'inspection de l'électricité et du gaz*. Ce qui suit est une brève description de leurs principales caractéristiques.

SECTION 1 – Ratings and Specifications

PARTIE 1 – Classements et caractéristiques

Approved Model Designations / Désignations de modèle approuvé				
The model IVOKTA 245 is a combined voltage and current transformer. It is designed for outdoor use. Le modèle IVOKTA 245 est un transformateur de mesure combiné. Il est conçu pour une utilisation extérieur.				
<i>Transformers are approved for revenue metering only for the characteristics identified below:</i> <i>Les transformateurs sont approuvés aux fins de facturation seulement pour les caractéristiques indiquées ci-dessous:</i>				
300/150 x 1200/600-5-5A 138000-115/69-115/69V			Thermal Burden / Fardeau thermique : 5000 VA	
Voltage Class / Catégorie de tension : 245 kV				
Rated Current Ratio / Rapport nominal de courant	Approved Primary and Secondary Current / Courant primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rating Factor / Facteur de surcharge
Primary reconnect: 1 Turn. / Reconnection au primaire : 1 Tour.				
1200/600-5-5A	1200-5A	W ₁ -W ₃	0.15B1.8	2.0
	600-5A	W ₂ -W ₃	0.15B1.8	2.0
Primary reconnect: 4 Turns. / Reconnection au primaire : 4 Tours.				
300/150-5-5A	300-5A	X ₁ -X ₃	0.15B1.8	4.0
	150-5A	X ₂ -X ₃	0.15B1.8	4.0
Rated Voltage Ratio / Rapport nominal de tension	Approved Primary and Secondary voltage / Tension primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rated Voltage Factor / Facteur de tension assigné
138000-115/69-115/69V	138000-115V	Y ₁ -Y ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s
	138000-115V	Z ₁ -Z ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s

Transformers are approved for revenue metering only for the characteristics identified below:

Les transformateurs sont approuvés aux fins de facturation seulement pour les caractéristiques indiquées ci-dessous:

400-5A 138000-115/69-115/69V **Thermal Burden / Fardeau thermique : 5000 VA**

Voltage Class / Catégorie de tension : 245 kV

Rated Current Ratio / Rapport nominal de courant	Approved Primary and Secondary Current / Courant primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rating Factor / Facteur de surcharge
400-5A	400-5A	X ₁ -X ₂	0.15B1.8	4.0
Rated Voltage Ratio / Rapport nominal de tension	Approved Primary and Secondary voltage / Tension primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rated Voltage Factor / Facteur de tension assigné
138000-115/69- 115/69V	138000-115V	Y ₁ -Y ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s
	138000-115V	Z ₁ -Z ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s

200-5A 138000-115/69-115/69V **Thermal Burden / Fardeau thermique : 5000 VA**

Voltage Class / Catégorie de tension : 250 kV

Rated Current Ratio / Rapport nominal de courant	Approved Primary and Secondary Current / Courant primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rating Factor / Facteur de surcharge
200-5A	200-5A	X ₁ -X ₂	0.15B1.8	4.0
Rated Voltage Ratio / Rapport nominal de tension	Approved Primary and Secondary voltage / Tension primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rated Voltage Factor / Facteur de tension assigné
138000-115/69- 115/69V	138000-115V	Y ₁ -Y ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s
	138000-115V	Z ₁ -Z ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s

Transformers are approved for revenue metering only for the characteristics identified below:


Les transformateurs sont approuvés aux fins de facturation seulement pour les caractéristiques indiquées ci-dessous:

200/150-5A 138000-115/69-115/69V		Thermal Burden / Fardeau thermique : 6000 VA		
Voltage Class / Catégorie de tension : 255 kV				
Rated Current Ratio / Rapport nominal de courant	Approved Primary and Secondary Current / Courant primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rating Factor / Facteur de surcharge
200-5A	200-5A	X ₁ -X ₃	0.15B1.8	4.0
150-5A	150-5A	X ₁ -X ₂	0.15B0.9	4.0
Rated Voltage Ratio / Rapport nominal de tension	Approved Primary and Secondary voltage / Tension primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rated Voltage Factor / Facteur de tension assigné
138000-115/69-115/69V	138000-115V	Y ₁ -Y ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s
	138000-115V	Z ₁ -Z ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s

300 x 150-5-5A 138000-115/69-115/69V		Thermal Burden / Fardeau thermique : 5000 VA		
Voltage Class / Catégorie de tension : 255 kV				
Rated Current Ratio / Rapport nominal de courant	Approved Primary and Secondary Current / Courant primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rating Factor / Facteur de surcharge
300-5-5A	300-5A	X ₁ -X ₂	0.15B1.8	2.0
	300-5A	W ₁ -W ₂	0.15B1.8	2.0
150-5-5A	150-5A	X ₁ -X ₂	0.15B1.8	4.0
	150-5A	W ₁ -W ₂	0.15B1.8	4.0
Rated Voltage Ratio / Rapport nominal de tension	Approved Primary and Secondary voltage / Tension primaire et secondaire approuvé	Approved Tap / Enroulement approuvé	Accuracy Class / Classe de précision	Rated Voltage Factor / Facteur de tension assigné
138000-115/69-115/69V	138000-115V	Y ₁ -Y ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s
	138000-115V	Z ₁ -Z ₃	0.3WXYZ ZZ	1.1 Cont. 1.73Un 60s

SECTION 2 – Nameplate and Photos

PARTIE 2 – Plaque signalétique et photos

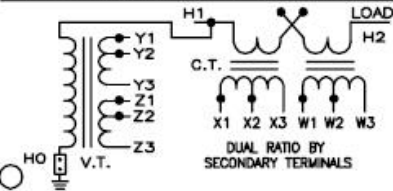


TRENCH LIMITED

HERMETICALLY SEALED SINGLE-PHASE METERING UNIT
 TYPE IVOKTA 245

MADE IN CANADA

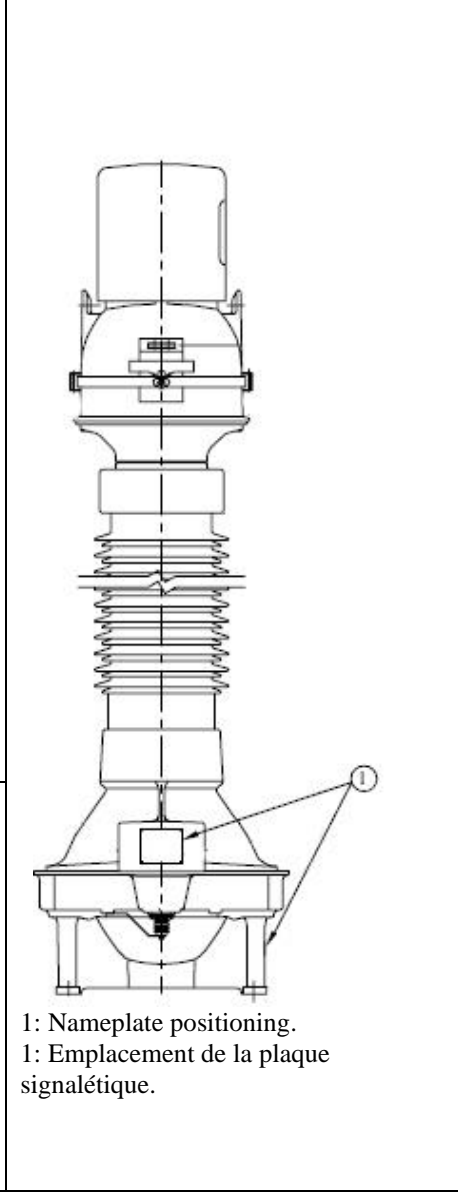
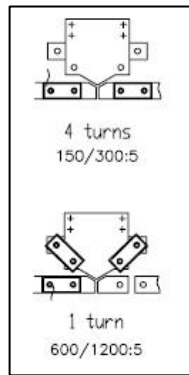
Um	245 kV	BIL	1050 kV	FREQUENCY	60 Hz
SER. NO.	**	BUILT	**	TOT. WT. lb.	2380 GAL. OIL 74
CURRENT		CHARACTERISTICS		VOLTAGE	
150/300x600/1200:5	A	RATIO		En	138000 V
In	300x1200	A	RATED PRI.	1200:1	115 V IC approved
	5	A	RATED SEC.	2000:1	69 V
0.15 %	B 1.8*	ACC. CLASS & BURDEN		0.3 %	WXYZ,ZZ
4 x 2 RF @ 30° C.		THERM. RATING @ 30° C.		5000 VA	
157.5kA	I Mech PEAK	RATED VOLTAGE FACTOR		1.1 Cont. & 1.73Un 60s	
63 kA	I Therm 1 SEC.	V.T. BURDENS REFER TO THE SUM OF THE BURDENS			
150:5	X2-X3	CT RATIO/TERM	SEC.V./TERM	69	Y2-Y3 & Z2-Z3
300:5	X1-X3	CT RATIO/TERM	SEC.V./TERM	115	Y1-Y3 & Z1-Z3
600:5	W2-W3	CT RATIO/TERM	STANDARD	IEEE C57.13, CSA C60044	
1200:5	W1-W3	CT RATIO/TERM	IC APPROVAL	**	
* 0.15B1.8 FROM 5% OF RATED CURRENT TO RF x RATED CURRENT					



DUAL RATIO BY SECONDARY TERMINALS

CAUTION:
 HIGH CREST VOLTAGES MAY OCCUR ACROSS C.T. SECONDARY TERMINALS WHEN OPEN-CIRCUITED. TO AVOID PERSONNEL INJURY, OR EQUIPMENT DAMAGE, THE SECONDARY MUST ALWAYS BE SHORT-CIRCUITED OR CONNECTED TO A BURDEN.

NOTICE:
 THIS TRANSFORMER WAS FILLED WITH NON PCB MINERAL OIL THAT CONTAINED LESS THAN 1 PPM PCB AT THE TIME OF MANUFACTURE.



TRENCH LIMITED MADE IN CANADA

HERMETICALLY SEALED SINGLE-PHASE METERING UNIT
 TYPE IVOKTA 245

Um	245 kV	BIL	1050 kV	FREQUENCY	60 Hz
SER. NO.	**	BUILT	**	TOT. WT. lb.	2380 GAL. OIL 74
CURRENT		CHARACTERISTICS		VOLTAGE	
400:5	A	RATED PRI.		En	138000
In	400	A	RATIO RATED SEC. VOLT. V	1200:1	115 IC approved
	5	A	RATIO RATED SEC. VOLT. V	2000:1	69
0.15 %	B 1.8*	ACC. CLASS & BURDEN		0.3 %	WXYZ, ZZ
4.0	RF @ 30° C.	THERM. RATING @ 30° C.		5000	VA
157.5	kA I Mech PEAK	V.T. BURDENS REFER TO THE SUM OF THE BURDENS ON ALL WINDINGS			
63	kA I Therm 1 SEC.				
400:5	X1-X2	CT RATIO/TERM	SEC.V./TERM	69	Y2-Y3 & Z2-Z3
STANDARD	IEEE C57.13		SEC.V./TERM	115	Y1-Y3 & Z1-Z3
IC APPROVAL	**		RATED VOLTAGE FACTOR	1.1 Cont. & 1.73Un 60s	
*0.15B1.8 FROM 5% TO 400% OF RATED CURRENT				IC approved	
*0.15B1.8 FROM 0.25% TO 400% OF RATED CURRENT				Manufacturer tested	

CAUTION:
 HIGH CREST VOLTAGES MAY OCCUR ACROSS C.T. SECONDARY TERMINALS WHEN OPEN-CIRCUITED. TO AVOID PERSONNEL INJURY, OR EQUIPMENT DAMAGE, THE SECONDARY MUST ALWAYS BE SHORT-CIRCUITED OR CONNECTED TO A BURDEN.

NOTICE:
 THIS TRANSFORMER WAS FILLED WITH NON PCB MINERAL OIL THAT CONTAINED LESS THAN 1 PPM PCB AT THE TIME OF MANUFACTURE.

TRENCH LIMITED MADE IN CANADA

HERMETICALLY SEALED SINGLE-PHASE METERING UNIT
 TYPE IVOKTA 245

Um	250 kV	BIL	1050 kV	FREQUENCY	60 Hz
SER. NO.	*	BUILT	*	TOT. WT. lb.	2380 GAL. OIL 74
CURRENT		CHARACTERISTICS		VOLTAGE	
200:5	A	RATIO		2000/1200:1	
In	200	A	RATED PRI.	En	138000
	5	A	RATED SEC.	69/115	
0.15 %	B 1.8 **	ACC. CLASS & BURDEN		0.3 %	WXYZ, ZZ
4.0	RF @ 30° C.	THERM. RATING @ 30° C.		5000	VA
125	kA I Mech PEAK	V.T. BURDENS REFER TO THE SUM OF THE BURDENS ON ALL WINDINGS			
50	kA I Therm 1 SEC.				
200:5	X1-X2	CT RATIO/TERM	SEC.V./TERM	69	Y2-Y3 & Z2-Z3
STANDARD	CSA 60044-1		SEC.V./TERM	115	Y1-Y3 & Z1-Z3
IC APPROVAL			RATED VOLTAGE FACTOR	1.1 Cont., 1.73Un 60s	
** 0.15B1.8 FROM 5% TO 400% OF RATED CURRENT				IC APPROVED	
** 0.15B1.8 FROM 0.5% - 5% OF RATED CURRENT				MANUFACTURER TESTED	
** 0.3B1.8 FROM 0.25% - 0.5% OF RATED CURRENT					

CAUTION:
 HIGH CREST VOLTAGES MAY OCCUR ACROSS C.T. SECONDARY TERMINALS WHEN OPEN-CIRCUITED. TO AVOID PERSONNEL INJURY, OR EQUIPMENT DAMAGE, THE SECONDARY MUST ALWAYS BE SHORT-CIRCUITED OR CONNECTED TO A BURDEN.

NOTICE:
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TRENCH LIMITED MADE IN CANADA

HERMETICALLY SEALED SINGLE-PHASE METERING UNIT
 TYPE IVOKTA 245

Um	255 kV	BIL	1050 kV	FREQUENCY	60 Hz
SER. NO.	**	BUILT	**	TOT. WT. lb.	2380 GAL. OIL 74
CURRENT		CHARACTERISTICS		VOLTAGE	
150/200:5	A	RATED PRI.		En	138000 V
In	200 A	RATIO RATED SEC. VOLT. V		1200:1	115 IC approved
	5 A	RATIO RATED SEC. VOLT. V		2000:1	69
0.15 % B 0.9/1.8*		ACC. CLASS & BURDEN		0.3 % WXYZ,ZZ	
4.0 RF @ 30° C.		THERM. RATING @ 30° C.		6000 VA	
157.5 kA	I Mech PEAK	V.T. BURDENS REFER TO THE SUM OF THE BURDENS ON ALL WINDINGS			
63 kA	I Therm 1 SEC.				
150:5	X1-X2	CT RATIO/TERM	SEC.V./TERM	69	Y2-Y3 & Z2-Z3
200:5	X1-X3		SEC.V./TERM	115	Y1-Y3 & Z1-Z3
STANDARD		CSA 61869-1 & 4		OVER VOLTAGE FACTOR 1.1 CONT.-IC APPROVED	
IC APPROVAL		1.2 CONT. 1.73 Un 60s - TESTED			
* 0.15B0.9 ON 150:5A - IC APPROVED		0.3B0.9 FROM 1% TO 5% ON 150:5A - TESTED			
* 0.15B1.8 ON 200:5A - IC APPROVED		0.3B1.8 FROM 1% TO 5% ON 200:5A - TESTED			

CAUTION:
 HIGH CREST VOLTAGES MAY OCCUR ACROSS C.T. SECONDARY TERMINALS WHEN OPEN-CIRCUITED. TO AVOID PERSONNEL INJURY, OR EQUIPMENT DAMAGE, THE SECONDARY MUST ALWAYS BE SHORT-CIRCUITED OR CONNECTED TO A BURDEN.

NOTICE:
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TRENCH LIMITED MADE IN CANADA

HERMETICALLY SEALED SINGLE-PHASE METERING UNIT
 TYPE IVOKTA 245

Um	255 kV	BIL	1050 kV	FREQUENCY	60 Hz
SER. NO.	*	BUILT	*	TOT. WT. lb.	2380 GAL. OIL 74
CURRENT		CHARACTERISTICS		VOLTAGE	
150X300:5//5	A	RATED PRI.		En	138000 V
In	150X300 A	RATIO RATED SEC. VOLT. V		1200:1	115 IC APPROVED
	5 A	RATIO RATED SEC. VOLT. V		2000:1	69
0.15 % B 1.8 **		ACC. CLASS & BURDEN		0.3 % WXYZ,ZZ	
4.0/2.0 RF @ 30° C		THERM. RATING @ 30° C.		5000 VA	
CT RATIO	I Therm 1 SEC.	I Mech PEAK	V.T. BURDENS REFER TO THE SUM OF THE BURDENS ON ALL WINDINGS		
150:5	50 kA	125 kA			
300:5	63 kA	157.5 kA	SEC.V./TERM	69	Y2-Y3 & Z2-Z3
STANDARD		CAN/CSA - C61869-4		SEC.V./TERM	115 Y1-Y3 & Z1-Z3
IC APPROVAL AE-2391		RATED VOLTAGE FACTOR 1.1 Cont., 1.73Un 60s			
** 0.15B1.8 FROM 5% TO 400% Ipn ON CT RATIO 150:5 & 0.15B1.8 FROM 5% TO 200% Ipn ON CT RATIO 300:5					
** 0.3B1.8 FROM 1% - 5% OF RATED CURRENT ON CT RATIO 300:5 AND 150:5 MANUFACTURE TESTED					
RF=4.0/2.0 IC APPROVED; RF=2.66 ON 300A MANUFACTURE TESTED					

CAUTION:
 HIGH CREST VOLTAGES MAY OCCUR ACROSS C.T. SECONDARY TERMINALS WHEN OPEN-CIRCUITED. TO AVOID PERSONNEL INJURY, OR EQUIPMENT DAMAGE, THE SECONDARY MUST ALWAYS BE SHORT-CIRCUITED OR CONNECTED TO A BURDEN.

NOTICE:
 THIS TRANSFORMER WAS FILLED WITH NON PCB MINERAL OIL THAT CONTAINED LESS THAN 1 PPM PCB AT THE TIME OF MANUFACTURE.

SECTION 3 – Original and Revisions

PARTIE 3 – Originale et Révisions

	Issued Date / Date d'émission	Evaluator / Évaluateur
Original / Originale	2018-06-21	National Research Council Reference / Référence: EPM-2018-0017A EPM-2018-0017B Ray Kandalaft Legal Metrologist / Métrologiste légal

Revision / Révision	Issued Date / Date d'émission	Evaluator / Évaluateur
1	2018-09-05	Ray Kandalaft Legal Metrologist / Métrologiste légal
Purpose of Revision		But de la Révision
The ratios 300/150 x 1200/600-5-5A, 138000-115/69-115/69V have been added.		Les rapports 300/150 x 1200/600-5-5A, 138000-115/69-115/69V ont été ajoutés.

Revision / Révision	Issued Date / Date d'émission	Evaluator / Évaluateur
2	2019-08-02	Graeme Banks Senior Legal Metrologist / Métrologiste légal principal
Purpose of Revision		But de la Révision
The 200-5A ratio was approved.		Le rapport de 200-5A était approuvé.

Revision / Révision	Issued Date / Date d'émission	Evaluator / Évaluateur
3	2020-11-04	Ray Kandalaft Senior Legal Metrologist / Métrologiste légal principal
Purpose of Revision		But de la Révision
The ratios 200/150-5A, 138000-115/69-115/69V have been added.		Les rapports 200/150-5A, 138000-115/69-115/69V ont été ajoutés.

Revision / Révision	Issued Date / Date d'émission	Evaluator / Évaluateur
4	2022-05-27	Ray Kandalaft Senior Legal Metrologist / Métrologiste légal principal
Purpose of Revision		But de la Révision
The ratios 300 x 150-5-5A, 138000-115/69-115/69V have been added.		Les rapports 300 x 150-5-5A, 138000-115/69-115/69V ont été ajoutés.

SECTION 4 – Approval

The design, composition, construction and performance of the meter type(s) identified herein have been evaluated in accordance with regulations and specifications established under the *Electricity and Gas Inspection Act*. Approval is hereby granted accordingly pursuant to subsection 9(4) of the said Act.

The sealing, markings, installation, use and manner of use of meters are subject to inspection in accordance with regulations and specifications established under the *Electricity and Gas Inspection Act*. The sealing and marking requirements are set forth in specifications established pursuant to section 18 of the *Electricity and Gas Inspection Regulations*. Installation and use requirements are set forth in specifications established pursuant to section 12 of the Regulations. Verification of conformity is required in addition to this approval for all metering devices excepting instrument transformers. Inquiries regarding inspection and verification should be addressed to the local office of Measurement Canada.

Original copy signed by:

Adnan Rashid
Senior Engineer – Electricity Measurement
Engineering and Laboratory Services Directorate

PARTIE 4 – Approbation

La conception, la composition, la construction et la performance du(des) type(s) de compteur(s) identifié(s) ci-dessus ayant fait l'objet d'une évaluation conformément au Règlement et aux normes établis aux termes de la *Loi sur l'inspection de l'électricité et du gaz*, la présente approbation est accordée en application du paragraphe 9(4) de ladite Loi.

Le scellage, le marquage, l'installation et l'utilisation des compteurs sont soumis à l'inspection conformément au Règlement et aux normes établis aux termes de la *Loi sur l'inspection de l'électricité et du gaz*. Les exigences de scellage et de marquage sont définies dans les normes établies en vertu de l'article 18 du *Règlement sur l'inspection de l'électricité et du gaz*. Les exigences d'installation et d'utilisation sont définies dans les normes établies en vertu de l'article 12 dudit règlement. En plus de cette approbation et sauf dans les cas des transformateurs de mesure, une vérification de conformité est requise. Toute question sur l'inspection et la vérification de conformité doit être adressée au bureau local de Mesures Canada

Copie authentique signée par :

Adnan Rashid
Ingénieur principal – Mesure de l'électricité
Direction de l'ingénierie et des services de laboratoire

Date: 2022-05-27

Web Site Address / Adresse du site Internet:
<http://mc.ic.gc.ca>