

(ALL DIMENSIONS ARE IN mm)

COMPUTER FILE NAME

REF. DRG. NO.

SIGN. AND DATE

INVENTORY NO

OWNER:	INDIAN OIL CORPORATION LIMITED
CONSULTANT:	TATA CONSULTING ENGINEERS LIMITED



FOR TENDER PURPOSE ONLY

SIZE-A3

INVENTORY NO.		SIGN. AND DATE		REF. DRG. NO.		COMPUTER FILE NAME		THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY	
REV. DATE		REV. DATE		REV. DATE		REV. DATE			
04 04/06/2020		03 28/05/2020		02 23/05/2020		01 29/04/2020			
CHD/APPD VK		CHD/APPD VK		CHD/APPD VK		CHD/APPD VK			
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FOR TENDER PURPOSE ONLY

SIZE-A3

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

**220 kV CURRENT TRANSFORMER
(GIS CT)**

CORE NO.	CURRENT RATIO	OUTPUT BURDEN AT LOWEST TAP	MIN KPV	MAX Ie AT KPV	MAX RCT	ACCURACY CLASS	PURPOSE
1	2000-1000-500/1A	-	2000-1000-500V	30-60-120mA	10-5-2.5 Ohms	PS	PROTECTION
2	2000-1000-500/1A	-	2000-1000-500V	30-60-120mA	10-5-2.5 Ohms	PS	PROTECTION
3	2000-1000-500/1A	30VA	-	-	-	0.2s, I _{err} ≤ 5	METERING
4	2000-1000-500/1A	-	2000-1000-500V	30-60-120mA	10-5-2.5 Ohms	PS	PROTECTION
5	2000-1000-500/1A	-	2000-1000-500V	30-60-120mA	10-5-2.5 Ohms	PS	PROTECTION

**220 kV CURRENT TRANSFORMER - TARIFF
METERING (OUTDOOR CT)**

CORE NO.	CURRENT RATIO	OUTPUT BURDEN AT LOWEST TAP	MIN KPV	MAX Ie AT KPV	MAX RCT	ACCURACY CLASS	PURPOSE
1	250/1A	10VA	-	-	-	0.2s, I _{err} ≤ 5	TARIFF METERING
2	250/1A	10VA	-	-	-	0.2s, I _{err} ≤ 5	TARIFF METERING

**BUSHING CURRENT TRANSFORMER
(HV SIDE)**

CORE NO.	CURRENT RATIO	OUTPUT BURDEN AT LOWEST TAP	MIN KPV	MAX Ie AT KPV/2	MAX RCT	ACCURACY CLASS	PURPOSE
1	250/1A	-	(20R _{ct} + 100) V	30 mA	1.25 Ohms	PS	REF PROTECTION

**BUSHING CURRENT TRANSFORMER
(HV NEUTRAL SIDE)**

CORE NO.	CURRENT RATIO	OUTPUT BURDEN AT LOWEST TAP	MIN KPV	MAX Ie AT KPV/2	MAX RCT	ACCURACY CLASS	PURPOSE
1	250/1A	-	(20R _{ct} + 100) V	30 mA	1.25 Ohms	PS	REF PROTECTION
2	250/1A	20VA	-	-	-	5P20	SBF PROTECTION

**BUSHING CURRENT TRANSFORMER
(LV SIDE)**

CORE NO.	CURRENT RATIO	OUTPUT BURDEN AT LOWEST TAP	MIN KPV	MAX Ie AT KPV/2	MAX RCT	ACCURACY CLASS	PURPOSE
1	1500/1A	-	(150R _{ct} + 300) V	30 mA	7.5 Ohms	PS	REF PROTECTION

220kV BUS VT (GIS EMT)

WINDING NO.	VOLTAGE RATIO	RATED BURDEN	ACCURACY CLASS	PURPOSE
1	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	3P	PROTECTION
2	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	3P	PROTECTION
3	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	120 VA	0.2	METERING

220kV CVT (8800 pF, +10%, -5%) - OUTDOOR CVT

WINDING NO.	VOLTAGE RATIO	RATED BURDEN	ACCURACY CLASS	PURPOSE
1	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	3P	PROTECTION
2	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	3P	PROTECTION
3	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	0.2	METERING

220kV VT - TARIFF METERING (OUTDOOR EMT)

WINDING NO.	VOLTAGE RATIO	RATED BURDEN	ACCURACY CLASS	PURPOSE
1	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	20 VA	0.2	TARIFF METERING
2	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	20 VA	0.2	TARIFF METERING

**BUSHING CURRENT TRANSFORMER
(LV NEUTRAL SIDE)**

CORE NO.	CURRENT RATIO	OUTPUT BURDEN AT LOWEST TAP	MIN KPV	MAX Ie AT KPV/2	MAX RCT	ACCURACY CLASS	PURPOSE
1	1500/1A	-	(150R _{ct} + 300) V	30 mA	7.5 Ohms	PS	REF PROTECTION
2	1500/1A	20VA	-	-	-	5P20	SBF PROTECTION

33 kV LIB CURRENT TRANSFORMER (LIB-CT1)

CORE NO.	CURRENT RATIO	OUTPUT BURDEN AT LOWEST TAP	MIN KPV	MAX Ie AT KPV/2	MAX RCT	ACCURACY CLASS	PURPOSE
1	1250/1A	-	625V	30mA	6.25 Ohms	PS	PROTECTION
2	1250/1A	30VA	-	-	-	1.0I _{err} ≤ 5	METERING
3	1250/1A	15VA	-	-	-	5P20	PROTECTION

33 kV LIB CURRENT TRANSFORMER (LIB-CT2)

CORE NO.	CURRENT RATIO	OUTPUT BURDEN AT LOWEST TAP	MIN KPV	MAX Ie AT KPV/2	MAX RCT	ACCURACY CLASS	PURPOSE
1	1250/1A	-	625V	30mA	6.25 Ohms	PS	PROTECTION
2	1250/1A	-	625V	30mA	6.25 Ohms	PS	PROTECTION

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220kV LINE VT (GIS EMT)

WINDING NO.	VOLTAGE RATIO	RATED BURDEN	ACCURACY CLASS	PURPOSE
1	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	3P	PROTECTION
2	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	3P	PROTECTION
3	$\frac{220}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	0.2	METERING

33kV LIB VT

WINDING NO.	VOLTAGE RATIO	RATED BURDEN	ACCURACY CLASS	PURPOSE
1	$\frac{33}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	1.0	METERING
2	$\frac{33}{\sqrt{3}} / \frac{0.110}{\sqrt{3}}$ kV	50 VA	3P	PROTECTION

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ZONE	REVISED AS PER TCE & IOCL COMMENTS DT 03/06/2020		ZONE	REVISED AS PER TCE & IOCL COMMENTS DT 28/05/2020		ZONE	REVISED AS PER TCE & IOCL COMMENTS DT 04/05/2020		ZONE	REVISED AS PER TCE & IOCL COMMENTS DT 19/03/2020	

CUSTOMER: LSTK JOB FOR ISBL WORK OF 220kV GRID POWER IMPORT AT PANIPAT REFINERY
LOA NO. RPRC182491/26286965 DTD.24.01.2020

INDIAN OIL CORPORATION LIMITED



TATA CONSULTING ENGINEERS LIMITED

BHARAT HEAVY ELECTRICALS LTD.
TRANSMISSION BUSINESS GROUP

TITLE

220/33KV SWITCHYARD- KEY METERING
& PROTECTION SINGLE LINE DIAGRAM

NAME	SIGN.	DATE
DRN. RD		12.03.2020
CHD. RD		12.03.2020
APPD. VK		12.03.2020
DEPT. TBM CODE 411	UNTOL. DIMS. OR 9/11/1	SCALE N.T.S
WEIGHT (KG) N.A.	REF. TO ASSY. DRG. N.A.	ITEM NO. N.A.
DRAWING/ DOCUMENT NO. TB-3-411-510-002		REV. 04
SHT. No 08	NO. OF SHT. 08	

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