

Notice to Bidder

Subject : Online Payment for Purchase of Bidding Documents

Due to the outbreak of COVID-19 in Thailand, please be informed of the online payment for purchase of bidding documents as follows:

- 1) Payment shall be made by bank transfer or telegraphic transfer to EGAT's account no. 109-6-01958-2 (swift code : KRTHTHBK), Krung Thai Bank Public Company Limited, Bangkrui Branch, Nonthaburi.

All bank charges and fees incurred by the payment of bidding documents shall be under the buyer's responsibility.

- 2) Download the Registration Form and fill out all necessary information by typing. (Complete data is required.)
- 3) Submit the fill-out Registration Form and the proof of payment from 1) to the email address of the in-charge officer and procurement.tse@egat.co.th in the CC. before 15.00 hrs. Bangkok Standard Time.
- 4) After the payment has been verified for approximately 3 working days, the in-charge officer will send the link for downloading the bidding documents together with the receipt to the purchaser's email address in the Registration Form.

***** Please note that this online payment process is a temporary measure due to the COVID-19 outbreak. The online payment process will be available until further notice from EGAT *****

Registration Form

Invitation to Bid No. TS12-DSS-03

Supply of Digital Substation Protection and Automation System

Transmission System Expansion Project No. 12

Available Duration for Purchasing : July 6, 2021 - August 18, 2021

Price of Bidding Documents : THB 2,000.-

Instructions

- 1) Payment shall be made by bank transfer or telegraphic transfer to EGAT's account no. 109-6-01958-2 (swift code : KRTHTHBK), Krung Thai Bank Public Company Limited, Bangkruai Branch, Nonthaburi.
- 2) Fill out this Registration Form in English by typing. (Complete data is required.)
- 3) Submit the filled-out Registration Form and the proof of payment to the in-charge officer via email (with cc. procurement.tse@egat.co.th) before 15.00 hrs. Bangkok Standard Time.
- 4) The in-charge officer will send the link for downloading the bidding documents together with the receipt to the purchaser's email address in the Registration Form, which will take approximately 3 working days.

For Purchaser			TAX ID :
No.	Receipt No. :	Date :	
Bidder's Name			
Address			
		Country :	
Name of Contact Person :		Tel.	Mobile No.
Email Address :			
Local Representative			
Address			
		Tax ID :	
Name of Contact Person :		Tel.	Mobile No.
Email Address :			
For Procurement Officer		Change of Bidder's Name	TAX ID :
Bidder's Letter No. :		Dated :	
New Bidder's Name			
Address			
		Country :	
Name of Contact Person :		Tel.	Mobile No.
Email Address :			
Contact Information of In-charge Officer			
Name	Mr. Pasakorn Piyathamrongrat		
Email address	pasakorn.piy@egat.co.th		
Telephone No.	0 2436 0348		
Mobile No.	08 4008 3231		



Invitation to Bid No. TS12-DSS-03

Supply of Digital Substation Protection and Automation System Transmission System Expansion Project No. 12

The Electricity Generating Authority of Thailand (EGAT) is calling for the subject Invitation to Bid to be financed by EGAT's fund.

Place of Delivery : Ex-works

Medium Cost (including Value Added Tax) : THB 92,700,000.-

Eligibility of Bidders

1. The Bidder shall be a local manufacturer or provide such locally manufactured materials and/or equipment and shall not be named in the List of Work Abandoners published by the Permanent Secretary, Ministry of Finance, and/or in the Debarment List and/or in the List of Work Abandoners declared by EGAT.
2. The Bidder shall not be a Jointly Interested Bidder with other Bidders as from the date of EGAT's issuance of the Invitation, or shall not be a person who undertakes any action as an "Obstruction of Fair Price Competition" for this Invitation.
3. The Bidder shall not either be EGAT's consultant or involve in EGAT's consultancy company under this Invitation to Bid, or shall not have EGAT's personnel involved in his business as shareholder having voting right that can control his business, director, manager, officer, employee, agent, or consultant except those who are officially ordered by EGAT to act or participate therein.
4. The Bidder shall not be the person who is privileged or protected not to be taken any legal proceedings under Thai Court; Provided that such Bidder's government declares that such special privilege is waived.
5. The Bidder who is a joint venture or consortium shall carry out all the work under such formation from the time of bidding until the fulfillment of the Contract.

Availability of Bidding Documents

Bidding Documents in CD-ROM will be available for examination of Bidder's Qualifications and purchase during 8:00 hrs. to 15:00 hrs., Bangkok Standard Time, as from July 6, 2021 to August 18, 2021 at THB 2,000.- per copy, non-refundable, at the following address :

International Procurement Department - Transmission Segment
(Room No. 301, 3rd Floor, Tor 082 Building)
Procurement and Inventory Management Division
Electricity Generating Authority of Thailand
Bangkruai, Nonthaburi 11130
Telephone no. 0 2436 0341
E-mail : procurement.tse@egat.co.th

Please find more details and download Registration Form for purchasing Bidding Documents at <http://www4.egat.co.th/fprocurement/biddingeng/>.

Delivery of Bids

Bids shall be submitted at *Bidding Room, 1st Floor, Tor 082 Building* during 9:30 hrs. to 10:00 hrs., Bangkok Standard Time, August 26, 2021 and will be opened publicly at 10:00 hrs.

ELECTRICITY GENERATING AUTHORITY OF THAILAND

June 29, 2021

Kannika Dhachalapat

(Mrs. Kannika Dhachalapat)
Chief, International Procurement Department -
Transmission Segment



ประกาศการไฟฟ้าฝ่ายผลิตแห่งประเทศไทย
เรื่อง ประกวดราคาซื้อ เลขที่ TS12-DSS-03

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย (กฟผ.) มีความประสงค์จะซื้อ Digital Substation Protection and Automation System สำหรับโครงการขยายระบบส่งไฟฟ้าระยะที่ 12 โดยใช้งบประมาณ กฟผ.

สถานที่ส่งมอบ : หน้าโรงงานผู้ผลิต

ราคากลาง (รวมภาษีมูลค่าเพิ่ม) : 92,700,000.- บาท

คุณสมบัติของผู้เสนอราคา

1. ต้องเป็นนิติบุคคลผู้ผลิตพัสดุ หรือผู้มีอาชีพขายพัสดุที่ผลิตในประเทศไทยตามประกาศ และต้องไม่เป็นผู้ที่จ้างงานซึ่งปลัดกระทรวงการคลังได้แจ้งเวียนชื่อไว้ หรือต้องไม่เป็นผู้ที่ กฟผ. ห้ามติดต่อหรือห้ามเข้าเสนอราคา หรือต้องไม่เป็นผู้ที่ได้รับผลของการสั่งให้นิติบุคคลหรือบุคคลอื่นเป็นผู้ที่จ้างงานตามคำสั่ง กฟผ.
2. ต้องไม่เป็นผู้มีผลประโยชน์ร่วมกันกับผู้เสนอราคารายอื่น ณ วันประกาศประกวดราคาครั้งนี้เป็นต้นไป หรือต้องไม่เป็นผู้กระทำการอันเป็นการขัดขวางการแข่งขันราคาอย่างเป็นธรรมในการดำเนินการประกวดราคาครั้งนี้
3. ต้องไม่เป็นที่ปรึกษาของ กฟผ. หรือมีส่วนร่วมในบริษัทที่ปรึกษาของ กฟผ. ในงานนี้ หรือต้องไม่มีผู้ปฏิบัติงาน กฟผ. เข้าไปมีส่วนร่วมในกิจการของผู้เสนอราคา ไม่ว่าจะในฐานะผู้ถือหุ้นที่มีสิทธิควบคุมการจัดการ กรรมการ ผู้อำนวยการ ผู้จัดการ พนักงาน ลูกจ้าง ตัวแทนหรือที่ปรึกษา ยกเว้น ในกรณีที่ผู้ปฏิบัติงานได้รับคำสั่งอย่างเป็นทางการจาก กฟผ. ให้ไปปฏิบัติงานหรือเข้าร่วมในกิจการของผู้เสนอราคา
4. ต้องไม่เป็นผู้ได้รับเอกสิทธิ์หรือความคุ้มกัน ซึ่งอาจปฏิเสธไม่ยอมขึ้นศาลไทย เว้นแต่รัฐบาลของผู้เสนอราคาได้มีคำสั่งให้สละสิทธิ์และความคุ้มกันเช่นนั้น
5. ผู้ประสงค์เข้าประกวดราคาในนามของกิจการร่วมค้าหรือกิจการร่วม (Joint Venture or Consortium) จะต้องดำเนินการทุกขั้นตอนของการประกวดราคาในนามของกิจการร่วมค้าหรือกิจการร่วม ตั้งแต่การเสนอราคาจนถึงสิ้นสุดข้อผูกพันกับ กฟผ.

การขายเอกสารประกวดราคา

ผู้สนใจติดต่อขอทราบรายละเอียด เพื่อตรวจสอบคุณสมบัติของผู้เสนอราคา และขอซื้อเอกสารประกวดราคา ในราคาชุดละ 2,000.- บาท ได้ที่ แผนกจัดซื้อต่างประเทศสายงานระบบส่ง (ห้อง 301 ชั้น 3 อาคารฝ่ายจัดซื้อจัดจ้างและบริหารพัสดุ ท.082) กองจัดซื้อจัดจ้างต่างประเทศสายงานระบบส่ง ฝ่ายจัดซื้อจัดจ้างและบริหารพัสดุ การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เชียงสะพานพระราม 7 จังหวัดนนทบุรี ในวันทำการระหว่างเวลา 08:00 น. ถึง 15:00 น. ตั้งแต่วันที่ 6 กรกฎาคม 2564 ถึงวันที่ 18 สิงหาคม 2564 หรือสอบถามทางโทรศัพท์ หมายเลข 0 2436 0341 หรืออีเมล procurement.tse@egat.co.th ทั้งนี้ สามารถ download แบบฟอร์มลงทะเบียนผู้ซื้อเอกสารประกวดราคาได้ที่เว็บไซต์ <http://www4.egat.co.th/fprocurement/biddingeng/>

การยื่นซองประกวดราคา

กำหนดยื่นซองประกวดราคา ในวันที่ 26 สิงหาคม 2564 เวลา 09:30 น. ถึง 10:00 น. และเปิดซองประกวดราคา เวลา 10:00 น. ณ ห้องประกวดราคา ชั้น 1 อาคารฝ่ายจัดซื้อจัดจ้างและบริหารพัสดุ ท.082 การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เชียงสะพานพระราม 7 จังหวัดนนทบุรี

ประกาศ ณ วันที่ 29 มิถุนายน 2564

กมลทิศา ชัยลัญญ์

(นางกรรณิกา ธวัลลัญญ์)

หัวหน้ากองจัดซื้อจัดจ้างต่างประเทศสายงานระบบส่ง

ตารางแสดงวงเงินงบประมาณที่ได้รับจัดสรรและราคากลาง(ราคาอ้างอิง)
ในการจัดซื้อจัดจ้างที่มีใช้งานก่อสร้าง

1. ชื่อโครงการ Bid No. TS12-DSS-03
งานจัดซื้อ Digital Substation Protection and Automation System
โครงการขยายระบบส่งไฟฟ้าระยะที่ 12
/หน่วยงานเจ้าของโครงการ ฝ่ายแผนงานและโครงการระบบส่ง การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย
2. วงเงินงบประมาณที่ได้รับจัดสรร
โครงการขยายระบบส่งไฟฟ้าระยะที่ 12 งบประมาณ 60,000 ล้านบาท
3. วันที่กำหนดราคากลาง 23 เมษายน 2564 (วันที่ อวส. อนุมัติ)
ราคารวมภาษีมูลค่าเพิ่มเป็นเงิน 92,700,000.00 บาท ราคา/หน่วย ตามเอกสารแนบ
4. แหล่งที่มาของราคากลาง
หลักเกณฑ์การกำหนดราคากลางการจัดซื้อและจัดจ้างงานก่อสร้างระบบส่งไฟฟ้าของสายงานระบบส่ง
5. รายชื่อเจ้าหน้าที่ผู้กำหนดราคากลาง
 - 5.1 นายรุหาญ รุจิธัญธาร วศ.10 กวป-ส.
 - 5.2 นายไวคุณธุ์ นวลย่อง วศ.6 กวป-ส.
 - 5.3 นายณภัทร คงทอง วศ.6 กวป-ส.

นงสวทษยภัทร ชุนผลกุล
นางสาวทษยภัทร ชุนผลกุล
ทชดส-ท.
29 มิ.ย. 2564


อวส.-อผค.

MEDIUM COST FOR BID NO. TS12-DSS-03
SUMMARY OF BID PRICE
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

No.	Description	Supply of Equipment		Local Currency (excluding VAT) Baht Amount
		Local Supply		
		Ex-works Price (excluding VAT) Baht		
		Amount		
1	Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment		77,342,364.00	9,303,332.00
BID PRICE		Baht	77,342,364.00	Baht 9,303,332.00
VAT		Baht	5,413,965.48	Baht 651,233.24
SUMMARY OF BID PRICE		Baht	82,756,329.48	Baht 9,954,565.24
SUMMARY OF BID PRICE		Baht	92,710,894.72	
SUMMARY OF MEDIUM COST (ROUNDED)		Baht	92,700,000.00	

กตัญญู พงษ์ทอง
นางสาวทศภัทร พูนผลกุล
ยศตส-น.
29 มิ.ย. 2564

- Project 1-C1 -



นางสุดารัตน์ ไชยพันธ์
อวส.
29 มิ.ย. 64

filename : TS12-DSS-03.xlsx

MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-1	DIGITAL SUBSTATION SYSTEM -- 2-115 KV BUS PROTECTION (LOW IMPEDANCE, NO SWITCHING ZONE, 10 FEEDERS)	- See Note 1 - Specification No.1008 - Panel No. 1R - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1, STU-E-3 sh.1, TP-E-20.3 and TP-E-10.1	1	EACH	1,376,946.00	1,376,946.00	XXXXXX	XXXXXX
1-2	DIGITAL SUBSTATION SYSTEM -- 115 KV LINE PROTECTION (PRIMARY IED-87L,21BU,67N,50BF,79,25) (SECONDARY IED-21P,67N,50BF,79,25) AND 115 KV LINE TO PEA PROTECTION (PRIMARY IED-21P,67N,67/67N,81,27,50BF,79,25) (SECONDARY IED-21P,67N,67/67N,81,27,50BF,79,25)	- See Note 1 - Specification No.1008 - Panel No. 2R - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1, STU-E-3 sh.1, TP-E-20.3 and TP-E-10.1	1	EACH	1,086,920.00	1,086,920.00	XXXXXX	XXXXXX
1-3	DIGITAL SUBSTATION SYSTEM -- 115/22 KV TRANSFORMER PROTECTION (PRIMARY IED-87K,51T/51TG,50BF) (SECONDARY IED-87K,51T/51TG,50BF) (FEEDER IED-51/51G,81,27)	- See Note 1 - Specification No.1008 - Panel Nos. 3R, 4R - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1, STU-E-3 sh.1, TP-E-20.3 and TP-E-10.1	2	EACH	499,246.00	998,492.00	XXXXXX	XXXXXX
1-4	DIGITAL SUBSTATION SYSTEM -- 115 KV LINE PROTECTION (PRIMARY IED-87L,21BU,67N,50BF,79,25) (SECONDARY IED-21P,67N,50BF,79,25) AND 115 KV LINE PROTECTION (PRIMARY IED-87L,21BU,67N,50BF,79,25) (SECONDARY IED-21P,67N,50BF,79,25)	- See Note 1 - Specification No.1008 - Panel Nos. 5R - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1, STU-E-3 sh.1, TP-E-20.3 and TP-E-10.1	1	EACH	1,227,961.00	1,227,961.00	XXXXXX	XXXXXX

นางสาวหทัยภัทร พูนผลกุล
 นขตส-ท.
 29 มิ.ย. 2564


 นางสุดารัตน์ ไชยพันธ์
 อวส.
 23 มิ.ย. 64

MEDIUM COST FOR BID NO. TS12-DSS-03

Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment

SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-5	EMERGENCY CONTROL PANEL	- Specification No.1008 - Panel No. ECP - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1, STU-E-3 sh.1, TP-E-20.3 and TP-E-10.1	1	EACH	266,553.00	266,553.00	XXXXX	XXXXX
1-6	DIGITAL SUBSTATION SYSTEM -- BREAKER CONTROL UNIT PANEL (4-BCU)	- See Note 1 - Specification No.1008 - Panel Nos. BCU-1, BCU-2 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1, STU-E-3 sh.1, TP-E-20.3 and TP-E-10.1	2	EACH	1,461,502.00	2,923,004.00	XXXXX	XXXXX
1-7	"DIGITAL SUBSTATION SYSTEM --2-STEP 115 KV CAPACITOR BANK PANEL (2-PRIMARY IED-60C, 51C/51CG, 59C, 27C, 50BF) (2-SECONDARY IED-60C, 51C/51CG, 59C, 27C, 50BF)(1-BCU)"	- See Note 1 - Specification No.1008 - Panel No. C115-1 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.2, STU-E-3 sh.2, TP-E-20.3, TP-E-10.1 and TP-E-20.6 sh.3	1	EACH	662,523.00	662,523.00	XXXXX	XXXXX
1-8	DIGITAL SUBSTATION SYSTEM --2-STEP 22-33 KV CAPACITOR BANK PANEL (2-PRIMARY IED-60CL, 60CH, 59C) (2-SECONDARY IED-60CL, 60CH, 59C) (1-BCU)"	- See Note 1 - Specification No.1008 - Panel No. C33-1(A), C33-2(A), C33-3(A), C33-1(B), C33-2(B) and C33-3(B) - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.2, STU-E-3 sh.3, TP-E-20.3 and TP-E-10.1 and TP-E-20.6 sh.2	6	EACH	662,523.00	3,975,138.00	XXXXX	XXXXX
1-9	DIGITAL SUBSTATION SYSTEM -- METERING PANEL (6 KWH&KVARH METERS)	- Specification No.1008 - Panel No. MP1 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1, STU-E-3 sh.1&2&3, TP-E-20.3 and TP-E-10.1	1	EACH	1,518,573.00	1,518,573.00	XXXXX	XXXXX

นางสาว พงษ์ภรณ์

นางสาวทศภัทร พูนผลกุล

นชคส-น.

29 มิ.ย. 2564

- Project 1-C2 -

นางสุภาวรัตน์ ไชยพันธ์

อวส.

28 มิ.ย. 64

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-10	DIGITAL SUBSTATION SYSTEM -- ETHERNET SWITCH PANEL	- Specification No.1008 - Panel Nos. ESW-S, ESW-P(A1) and ESW-P(B1) - Drawing Nos. STU-E-2.1 sh.1 ,TP-E-20.3, TP-E-20.6 sh.1 and TP-E-10.19	3	EACH	1,289,146.00	3,867,438.00	XXXXX	XXXXX
1-11	DIGITAL SUBSTATION SYSTEM -- GPS RECEIVER PANEL	- Specification No.1008 - Panel No. GPS - Drawing Nos. STU-E-2.1 sh.1, STU-E-3 sh.1&2&3, TP-E-20.3 and TP-E-10.19	1	EACH	335,677.00	335,677.00	XXXXX	XXXXX
1-12	E-1 CONVERTER PANEL	- Each E1(2 Mbps) Converter Device shall be supplied with 2 sets of 30 m Coaxial Cables - Panel No. E-1 CONV. - Drawing Nos. STU-E-1 sh.1, STU-E-2.1 sh.1, STU-E-3 sh.1, TP-E-20.3 and TP-E-10.19	1	EACH	362,920.00	362,920.00	XXXXX	XXXXX
1-13	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR TIE BAY (TIE BAY CONSISTS OF 1-VT(3ph) AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 - 2 separate merging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel No. MU700-1 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2&3, TP-E-20.3, TP-E-20.4 and TP-E-20.5	1	EACH	912,396.00	912,396.00	XXXXX	XXXXX

เนติพงษ์ พูนผลกุล
นางสาวหทัยภัทร พูนผลกุล
ทชตส-ท.
29 มิ.ย. 2564

- Project 1-C3 -

นางสุดารัตน์ ไชยพันธ์
ชวส.
22 มิ.ย. 64

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03

Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment

SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
Unit Price	Amount	Unit Price	Amount					
1-14	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR 115 KV CAPACITOR BANK (115 KV CAPACITOR BANK CONSISTS OF 1-CT(3ph), 1-CT(1ph), AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel No. MU701A-1, MU701B-1 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2&3, TP-E-20.3, TP-E-20.4 and TP-E-20.5	2	EACH	1,323,306.00	2,646,612.00	XXXXX	XXXXX
1-15	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR FEEDER (FEEDER CONSISTS OF 1-CT(3ph), 1-VT(3ph) AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel Nos. MU703-1, MU706-1, MU707-1, and MU708-1 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2&3, TP-E-20.3, TP-E-20.4 and TP-E-20.5	4	EACH	912,396.00	3,649,584.00	XXXXX	XXXXX
1-16	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR TRANSFORMER FEEDER (TRANSFORMER FEEDER CONSISTS OF 1-CT(3ph), AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel Nos. MU704-1, and MU705-1 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2&3, TP-E-20.3, TP-E-20.4 and TP-E-20.5	2	EACH	914,000.00	1,828,000.00	XXXXX	XXXXX

นางสาวทศภัทร พูนผลกุล
หนชคส-น
29 มิ.ย. 2564

- Project 1-C4 -

นางสุภาวดี โชติพันธ์
078 22 41 14

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03

Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment

SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price			
					Unit Price	Amount	Unit Price	Amount
1-17	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR TRANSFORMER (TRANSFORMER CONSISTS OF 4-CT(3ph), 1-VT(3ph), 1-TRANSFORMER, AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel Nos. MU704-2 and MU705-2 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2&3, TP-E-20.3, TP-E-20.4 and TP-E-20.5	2	SET	2,141,917.00	4,283,834.00	XXXXX	XXXXX
1-18	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR 5-STEP 22 KV C-BANK (CONSISTS OF 5-VT(1ph), AND 5-BREAKER)	- See Note 1 - Specification Nos.1008 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel No. MU704A-1, MU705B-1 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2&3, TP-E-20.3, TP-E-20.4 and TP-E-20.5	2	SET	475,463.00	950,926.00	XXXXX	XXXXX
1-19	DIGITAL SUBSTATION -- IEC61850 STATION LEVEL EQUIPMENT: ENGINEERING WORKSTATION, HMI SERVER, GATEWAY, SUPERVISORY SOFTWARE	- Specification No.1008 - Additional equipment optimized by bidder to fulfill station-level function shall be included. - Operator console and chairs shall be provided in the set as well. - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	1	SET	2,557,985.00	2,557,985.00	XXXXX	XXXXX
1-20	24 CORE NON-METALLIC OPTICAL FIBER CABLE (MULTIMODE)	- Specification No.1008 - Drawing Nos. STU-E-1 sh.1, STU-E-2.1 sh.1&2, STU-E-2.2 and TP-E-20.3	2500	METER	115.00	287,500.00	XXXXX	XXXXX

กฤษณ์ พงษ์พวง
นางสาวหทัยภัทร พูนผลกุล
หขตส-ท.
29 มิ.ย. 2564

- Project 1-C5 -


นางสุดารัตน์ ไชยพันธ์
ธ.ค. 23 พ.ค. 64

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price			
					(excluding VAT) Baht		Unit Price	Amount
1-21	EFLEX AND/OR HDPE CONDUIT WITH HOT-DIP GALVANIZED STEEL CLAMP	- Specification No.SD-FOT-P22-02/04/61 - Conduit Diameter Size = 50 mm. - Supplied with Hot-Dip Galvanized Steel Clamp 1 Set per 1 Meter of Conduit - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1&2, STU-E-2.2 and TP-E-20.3	2500	METER	30.00	75,000.00	XXXXXX	XXXXXX
1-22	LINE CURRENT DIFFERENTIAL RELAY (87L)	- Supply as Loose Part for Installation at HY1 Substation - Secondary Current Input Rating : 5A - Supplied with E1(2 Mbps) Converter Device and 2 Sets of 30 m Coaxial Cables - Specification No.1002 - Same type as supplied in item 1-4	1	EACH	311,139.00	311,139.00	XXXXXX	XXXXXX
1-23	LINE CURRENT DIFFERENTIAL RELAY (87L)	- Supply as Loose Part for Installation at KNE Substation - Secondary Current Input Rating : 5A - Supplied with E1(2 Mbps) Converter Device and 2 Sets of 30 m Coaxial Cables - Specification No.1002 - Same type as supplied in item 1-4	2	EACH	311,139.00	622,278.00	XXXXXX	XXXXXX
1-24	DIGITAL SUBSTATION SYSTEM -- DESIGN OF COMPLETE DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM BY SYSTEM INTEGRATOR	- See Note 2 - Specification No.1008 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2&3, TP-E-20.1, TP-E-20.2 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	1	SET	XXXXXX	XXXXXX	2,358,333	2,358,333

หญิงพิมพ์ พูนผล
นางสาวทศภัทร พูนผล
ยศสุ-น
29 มิ.ย. 2564


นางสุดารัตน์ ไชยพันธ์
ทวส.

MEDIUM COST FOR BID NO. TS12-DSS-03

Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
 SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
 TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price			
					Unit Price	Amount	Unit Price	Amount
1-25	DIGITAL SUBSTATION SYSTEM -- SYSTEM INSTALLATION SUPERVISOR.	- Specification No.1008 - System Installation Supervisor is responsible for item no. 1-1 to 1-21 - Drawing Nos. STU-E-1 sh.1&2, STU-E-2.1 sh.1&2, STU-E-2.2, STU-E-3 sh.1&2&3, TP-E-20.1, TP-E-20.2 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5		MAN-DAY	XXXXX	XXXXX	1,658,333	1,658,333
1-26	DIGITAL SUBSTATION SYSTEM -- 2-115 KV BUS PROTECTION (LOW IMPEDANCE, NO SWITCHING ZONE, 12 FEEDERS)	- See Note 1 - Specification No.1008 - Panel No. 1R - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1, TP-E-20.3 and TP-E-10.1	1	EACH	1,376,946.00	1,376,946.00	XXXXX	XXXXX
1-27	DIGITAL SUBSTATION SYSTEM -- 115 KV LINE PROTECTION (PRIMARY IED-87L,21BU,67N,50BF,79,25) (SECONDARY IED-21P,67N,50BF,79,25) AND 115 KV LINE PROTECTION (PRIMARY IED-87L,21BU,67N,50BF,79,25) (SECONDARY IED-21P,67N,50BF,79,25)	- See Note 1 - Specification No.1008 - Panel Nos. 2R and 5R - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1&2, TP-E-20.3 and TP-E-10.1	2	EACH	1,227,961.00	2,455,922.00	XXXXX	XXXXX
1-28	DIGITAL SUBSTATION SYSTEM -- 115/22 KV TRANSFORMER PROTECTION (PRIMARY IED-87K,51T/51TG,50BF) (SECONDARY IED-87K,51T/51TG,50BF) (FEEDER IED-51/51G,81,27)	- See Note 1 - Specification No.1008 - Panel No. 3R - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1, TP-E-20.3 and TP-E-10.1	1	EACH	499,246.00	499,246.00	XXXXX	XXXXX
1-29	"DIGITAL SUBSTATION SYSTEM -- 115/22 KV TRANSFORMER PROTECTION(PRIMARY IED-87K,51T/51TG,50BF) (SECONDARY IED-87K,51T/51TG,50BF)(2-FEEDER IED-51/51G,81,27)"	- See Note 1 - Specification No.1008 - Panel Nos. 4R, 6R and 7R - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1&2, TP-E-20.3 and TP-E-10.1	3	EACH	552,034.00	1,656,102.00	XXXXX	XXXXX

นางสาวพัชรา พูนผลกุล
 ทชคส-น
 29 มิ.ย. 2564

- Project 1-C7 -

นางสุภาวรัตน์ ไชยพันธ์
 ทชคส. 93 14 43 14

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03

Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment


SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-30	EMERGENCY CONTROL PANEL	- Specification No.1008 - Panel No. ECP - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1&2, TP-E-20.3 and TP-E-10.1	1	EACH	266,553.00	266,553.00	XXXXX	XXXXX
1-31	DIGITAL SUBSTATION SYSTEM -- BREAKER CONTROL UNIT PANEL (6-BCU)	- See Note 1 - Specification No.1008 - Panel No. BCU-1 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1&2, TP-E-20.3 and TP-E-10.1	1	EACH	1,987,011.00	1,987,011.00	XXXXX	XXXXX
1-32	DIGITAL SUBSTATION SYSTEM -- BREAKER CONTROL UNIT PANEL (4-BCU)	- See Note 1 - Specification No.1008 - Panel No. BCU-2 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1&2, TP-E-20.3 and TP-E-10.1	1	EACH	1,461,502.00	1,461,502.00	XXXXX	XXXXX
1-33	DIGITAL SUBSTATION SYSTEM -- METERING PANEL (2 KWH&KVARH METERS)	- Specification No.1008 - Panel No. MP1 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1&2 TP-E-20.3 and TP-E-10.1	1	EACH	553,329.00	553,329.00	XXXXX	XXXXX
1-34	DIGITAL SUBSTATION SYSTEM -- METERING PANEL (6 KWH&KVARH METERS)	- Specification No.1008 - Panel No. MP2 and MP3 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1&2 TP-E-20.3 and TP-E-10.1	2	EACH	1,518,573.00	3,037,146.00	XXXXX	XXXXX
1-35	DIGITAL SUBSTATION SYSTEM -- ETHERNET SWITCH PANEL	- Specification No.1008 - Panel Nos. ESW-S, ESW-P(A1) and ESW- P(B1) - Drawing Nos. MM2-E-2.1, TP-E-20.3, TP-E- 20.6 sh.1 and TP-E-10.19	3	EACH	1,289,146.00	3,867,438.00	XXXXX	XXXXX

หญิง พูนผลกุล
นางสาวทัญญ์ พูนผลกุล
พชตส-น.
29 มิ.ย. 2564

- Project 1-C8 -


นางสุภาวดี ไชยพันธ์
ทว. 23 มิ.ย. 64


filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-36	DIGITAL SUBSTATION SYSTEM -- GPS RECEIVER PANEL	- Specification No.1008 - Panel No. GPS - Drawing Nos. MM2-E-2.1, MM2-E-3 sh.1&2, TP-E-20.3 and TP-E-10.19	1	EACH	335,677.00	335,677.00	XXXXX	XXXXX
1-37	E-1 CONVERTER PANEL	- Each E1(2 Mbps) Converter Device shall be supplied with 2 sets of 30 m Coaxial Cables - Panel No. E-1 CONV. - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-3 sh.1&2, TP-E-20.3 and TP-E-10.19	1	EACH	467,074.00	467,074.00	XXXXX	XXXXX
1-38	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR TIE BAY (TIE BAY CONSISTS OF 1-VT(3ph) AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 and SD-FOT-P22 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel No. MU700-1, - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.2, MM2-E-3 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	1	EACH	912,396.00	912,396.00	XXXXX	XXXXX
1-39	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR FEEDER (FEEDER CONSISTS OF 1-CT(3ph), 1-VT(3ph) AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 and SD-FOT-P22 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel Nos. MU704A-1, MU703A-1, MU702-1 and MU704-1 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.2, MM2-E-3 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	4	EACH	912,396.00	3,649,584.00	XXXXXX	XXXXXX

บริษัท พชพ
นางสาวทศภัทร ชื่นผลกุล
หขตส-ท
29 มิ.ย. 2564

- Project 1-C9 -


นางสุภาวดี ไชยพันธ์
ทว. 23 มิ.ย. 64

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03

Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
 SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
 TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price			
					Unit Price	Amount	Unit Price	Amount
1-40	DIGITAL SUBSTATION SYSTEM – MERGING UNIT PANEL FOR TRANSFORMER FEEDER (TRANSFORMER FEEDER CONSISTS OF 1-CT(3ph), AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 and SD-FOT-P22 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel Nos. MU701A-1, MU701-1, MU703-1 and MU706-1 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.2, MM2-E-3 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	4	EACH	914,000.00	3,656,000.00	XXXXXX	XXXXXX
1-41	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR TRANSFORMER (TRANSFORMER CONSISTS OF 4-CT(3ph), 1-VT(3ph), 1-TRANSFORMER, AND 1-BREAKER)	- See Note 1 - Specification Nos.1008 and SD-FOT-P22 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel No. MU701A-2 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.2, MM2-E-3 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	1	SET	2,141,917.00	2,141,917.00	XXXXXX	XXXXXX
1-42	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT PANEL FOR TRANSFORMER (WITH 2 FEEDERS) (2-TRANSFORMER CONSISTS OF 6-CT(3ph), 1-VT(3ph), 1-TRANSFORMER, AND 2-BREAKER)	- See Note 1 - Specification Nos.1008 and SD-FOT-P22 - 2 separate meging units shall be provided for each switchgear and instrument transformer for redundancy. - Panel Nos. MU701-2, MU703-2 and MU706-2 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.2, MM2-E-3 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	3	SET	1,546,959.00	4,640,877.00	XXXXXX	XXXXXX

บริษัท พชพจ
 นางสาวหทัยภัทร พูนผลกุล
 หขตส-ท
 29 มิ.ย. 2564

- Project 1-C10 -

นางสุภารัตน์ ไชยพันธ์
 ๐๗๘ ๒๓ ๑๖.๖.๖๔


filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-43	DIGITAL SUBSTATION -- IEC61850 STATION LEVEL EQUIPMENT: ENGINEERING WORKSTATION, HMI SERVER, GATEWAY, SUPERVISORY SOFTWARE	- See Note 1 - Specification No.1008 - Additional equipment optimized by bidder to fulfill station-level function shall be included. - Operator console and chairs shall be provided in the set as well. - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-2.2, MM2-E-3 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	1	SET	2,557,985.00	2,557,985.00	XXXXX	XXXXX
1-44	24 CORE NON-METALLIC OPTICAL FIBER CABLE (MULTIMODE)	- Specification No.1008 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-2.2 and TP-E-20.3	2500	METER	115.00	287,500.00	XXXXX	XXXXX
1-45	EFLEX AND/OR HDPE CONDUIT WITH HOT-DIP GALVANIZED STEEL CLAMP	- Specification No.SD-FOT-P22-02/04/61 - Conduit Diameter Size = 50 mm. - Supplied with Hot-Dip Galvanized Steel Clamp 1 Set per 1 Meter of Conduit - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-2.2 and TP-E-20.3	2500	METER	30.00	75,000.00	XXXXX	XXXXX
1-46	LINE CURRENT DIFFERENTIAL RELAY (87L)	- Supply as Loose Part for Installation at MM3 Substation - Secondary Current Input Rating : 5A - Supplied with E1(2 Mbps) Converter Device and 2 Sets of 30 m Coaxial Cables - Specification No.1002 - Same type as supplied in item 1-27	2	EACH	311,139.00	622,278.00	XXXXX	XXXXX

ทศพลภัส พูนผลกุล
นางสาวทศพลภัส พูนผลกุล
ทชตส-น.
29 มิ.ย. 2564

- Project 1-C11 -


นางสุดารัตน์ ไชยพันธ์
ทชส.
23 มิ.ย. 64


filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price			
					Unit Price	Amount	Unit Price	Amount
1-47	LINE CURRENT DIFFERENTIAL RELAY (87L)	- Supply as Loose Part for Installation at LP2 Substation - Secondary Current Input Rating : 5A - Supplied with E1(2 Mbps) Converter Device and 2 Sets of 30 m Coaxial Cables - Specification No.1002 - Same type as supplied in item 1-27	2	EACH	311,139.00	622,278.00	XXXXX	XXXXX
1-48	DIGITAL SUBSTATION SYSTEM -- DESIGN OF COMPLETE DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM BY SYSTEM INTEGRATOR	- See Note 2 - Specification No.1008 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-2.2, MM2-E-3 sh.1&2, TP-E-20.1, TP-E-20.2 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5	1	SET	XXXXX	XXXXX	2,358,333	2,358,333
1-49	DIGITAL SUBSTATION SYSTEM -- SYSTEM INSTALLATION SUPERVISOR	- Specification No.1008 - System Installation Supervisor is responsible for item no. 1-25 to 1-44 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-2.2, MM2-E-3 sh.1&2, TP-E-20.1, TP-E-20.2 sh.1&2, TP-E-20.3, TP-E-20.4 and TP-E-20.5		MAN-DAY	XXXXX	XXXXX	1,658,333	1,658,333
1-50	BUS DIFFERENTIAL RELAY (Low Impedance-No Switching Zone)	Supply as Spare Part - Same Model Type as Supplied in Item 1-1 and 1-26 (Primary Protective Relay)	1	EACH	450,159.00	450,159.00	XXXXX	XXXXX
1-51	BUS DIFFERENTIAL RELAY (Low Impedance-No Switching Zone)	- Supply as Spare Part - Same Model Type as Supplied in Item 1-1 and 1-26 (Secondary Protective Relay)	1	EACH	450,159.00	450,159.00	XXXXX	XXXXX

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- Project I-C12 -


 นางสุตารัตน์ ไชยพันธ์
 ๒๓ มิ.ย. ๖๔

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03

Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
 SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
 TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-52	LINE CURRENT DIFFERENTIAL RELAY (87L)	- Supply as Spare Part - Same Model Type as Supplied in Item 1-2, 1-4 and 1-27 - Including Function (87L, 21BU, 67N, 50BF, 79, 25) with E1 Interface Device	1	EACH	311,139.00	311,139.00	XXXXXX	XXXXXX
1-53	DISTANCE RELAY (21+79) FOR 115 kV with 79/25	- Supply as Spare Part - Same Model Type as Supplied in Item 1-2, 1-4 and 1-27 - Including Function (21P, 67N, 50BF, 79, 25)	1	EACH	196,929.00	196,929.00	XXXXXX	XXXXXX
1-54	DISTANCE RELAY (21+79) FOR 115 kV with 79/25	- Supply as Spare Part - Same Model Type as Supplied in Item 1-2 (Primary Protective Relay) - Including Function (21P, 67N,67/67N, 81, 27, 50BF, 79, 25)	1	EACH	196,929.00	196,929.00	XXXXXX	XXXXXX
1-55	DISTANCE RELAY (21+79) FOR 115 kV with 79/25	- Supply as Spare Part - Same Model Type as Supplied in Item 1-2 (Secondary Protective Relay) - Including Function (21P, 67N,67/67N, 81, 27, 50BF, 79, 25)	1	EACH	196,929.00	196,929.00	XXXXXX	XXXXXX
1-56	TRANSFORMER DIFFERENTIAL RELAY (87K, 3 restraint windings)	- Supply as Spare Part - Same Model Type as Supplied in Item 1-3, 1-28 and 1-29 (Primary Protective Relay) - Including Function (87K, 51T/51TG, 50BF)	1	EACH	136,864.00	136,864.00	XXXXXX	XXXXXX
1-57	TRANSFORMER DIFFERENTIAL RELAY (87K, 3 restraint windings)	- Supply as Spare Part - Same Model Type as Supplied in Item 1-3, 1-28 and 1-29 (Secondary Protective Relay) - Including Function (87K, 51T/51TG, 50BF)	1	EACH	136,864.00	136,864.00	XXXXXX	XXXXXX

นางสาวทศภัทร พูนผลกุล
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 29 มิ.ย. 2564

- Project 1-C13 -

นางสุภารัตน์ ไชยพันธ์
 อวส.
 23 มิ.ย. 64

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price			
					Unit Price	Amount	Unit Price	Amount
1-58	TRANSFORMER OVERCURRENT RELAY (51T/51TG, 51L/51LG, 51/51G, 51S/51SG, 51C/51CG)	- Supply as Spare Part - Same Model Type as Supplied in Item 1-3, 1-28 and 1-29 - Including Function (51/51G, 81, 27)	1	EACH	58,795.00	58,795.00	XXXXX	XXXXX
1-59	OVERVOLTAGE RELAY (59N, 59C)	- Supply as Spare Part - Same Model Type as Supplied in Item 1-7 (Primary Protective Relay) - Including Function (60C, 51C/51CG, 59C, 27C, 50BF)	1	EACH	65,849.00	65,849.00	XXXXX	XXXXX
1-60	OVERVOLTAGE RELAY (59N, 59C)	- Supply as Spare Part - Same Model Type as Supplied in Item 1-7 (Secondary Protective Relay) - Including Function (60C, 51C/51CG, 59C, 27C, 50BF)	1	EACH	65,849.00	65,849.00	XXXXX	XXXXX
1-61	BAY CONTROL UNIT (BCU)	- Supply as Spare Part - Same Model Type as Supplied in Item 1-6, 1-31 and 1-32	1	EACH	312,960.00	312,960.00	XXXXX	XXXXX


กรณินทร์ พูนผลกุล,
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หขคส-น.
29 มิ.ย. 2564

นางสุภารัตน์ ไชยพันธ์
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MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-62	ETHERNET SWITCH	- Supply as Spare Part - Same Model Type as Supplied in Item 1-10 and 1-35	1	EACH	76,128.00	76,128.00	XXXXX	XXXXX
1-63	kWh&kVARh METER	- Supply as Spare Part - Same Model Type as Supplied in Item 1-9, 1-33 and 1-34	1	EACH	190,299.00	190,299.00	XXXXX	XXXXX
1-64	DIGITAL SUBSTATION SYSTEM -- MERGING UNIT SET (1-CT(3ph), 1-VI(3ph), 8-BI, 8-BO)	- Supply as Spare Part	1	SET	364,301.00	364,301.00	XXXXX	XXXXX
1-65	MCB, 6A, 2 POLE FOR DC SUPPLY	- Supply as Reserve Part	7	EACH	929.00	6,503.00	XXXXX	XXXXX
1-66	TEST SWITCH (TS, for relays)	- Supply as Reserve Part	14	EACH	4,703.00	65,842.00	XXXXX	XXXXX
1-67	DC UNDERVOLTAGE RELAY (27XB,27XR)	- Supply as Reserve Part	7	EACH	4,624.00	32,368.00	XXXXX	XXXXX
1-68	CUT OFF SWITCH, 10 CONTACTS (DTTCO, 87CO, 86ACO, 50/51SCO)	- Supply as Reserve Part	7	EACH	1,670.00	11,690.00	XXXXX	XXXXX
1-69	INDICATING LAMP (R,G,IL,LG)	- Supply as Reserve Part	7	EACH	304.00	2,128.00	XXXXX	XXXXX
1-70	TRIPPING RELAY (94P, 94BU, 51X, 79X)	- Supply as Reserve Part	7	EACH	22,360.00	156,520.00	XXXXX	XXXXX
1-71	TRAINING COURSE -- CONCEPTUAL DESIGN	- See Scope of Work Training course for Bid No.TS12-DSS-03 in the end of the Price	1	SET	XXXXXX	XXXXXX	410,000	410,000.00

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MEDIUM COST FOR BID NO. TS12-DSS-03
Schedule 1 : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment		Local Currency	
					Local Supply		(excluding VAT) Baht	
					Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount
1-72	TRAINING COURSE -- TESTING PROCEDURES	- See Scope of Work Training course for Bid No.TS12-DSS-03 in the end of the Price	1	SET	XXXXX	XXXXX	860,000	860,000.00
Total Price for Schedule 1					Baht 77,342,364.00		Baht 9,303,332.00	

Note 1: ***Criteria for selection of devices

1. Protective IEDs
 - Primary protective IEDs shall be supplied by same manufacturer.
 - Secondary Protective IEDs shall be supplied by same manufacturer.
 - Primary and secondary protective IEDs shall be from different manufacturer.
2. BCUs
 - BCUs shall be supplied by the same manufacturer as either primary or secondary protective IEDs.
3. Merging Units
 - All primary merging unit shall be supplied by same manufacturer.
 - All secondary merging unit shall be supplied by same manufacturer.
 - Primary and secondary merging units are not necessary to be from different manufacturer.

Note 2: *** Scope of work for System Integrator (SI) to design complete digital substation protection and automation system:

1. SI shall design a complete digital substation protection and automation system as well as communication network based on the IEC 61850 standard to coordinate with equipment provided by EGAT, i.e. fault recording system (FRS), capacitor bank protection, NCIT (Non-Conventional Instrument Transformer) and tele protection.
2. SI shall configure each IED and communication network to fulfill the designed digital substation protection and automation system.
3. SI shall design engineering work stations, HMI data servers, gateways and all system software required to run the IEC 61850 based substation protection and automation system along with the existing EGAT's SCADA. Signal list for data to be displayed on HMI and sent to NCC/RCC shall be discussed with EGAT.
4. SI shall provide complete schematic and wiring diagrams in both hardcopy and electronic file of the digital substation protection and automation system including programmable logic schemes of each IED, HMI graphic display, SSD files, ICD files, SCD files, CID files, signal list of all SV,GOOSE and MMS and communication network connection diagram. Furthermore, software needed for the mentioned SCL file configuration shall be provided as well. Regarding the SCD file configuration, the software shall support multi-vendor IEDs and cover at least all IED manufacturers included in substation.

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 29 มิ.ย. 2564

MEDIUM COST FOR BID NO. TS12-DSS-03
Service of Installation Supervisor (Schedule 1)
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12


Item No.	Description	Qty.	Unit	Local Currency (excluding VAT) Baht	
				Unit Price	Amount
1-25	DIGITAL SUBSTATION SYSTEM -- SYSTEM INSTALLATION SUPERVISOR		MAN DAY	1,658,333	1,658,333
1-49	DIGITAL SUBSTATION SYSTEM -- SYSTEM INSTALLATION SUPERVISOR		MAN DAY	1,658,333	1,658,333

Note:

1. The quoted total man-days for installation supervisor shall be the required number of days for complete installation, erection, field test and commissioning of all equipment as specified.
2. In addition to the quoted total man-days above, EGAT will also pay the following :
 - a. Travelling time from and to Supervisor's home office as well as travelling time from and to the installation site including ten (10) working days of operation, if any, which will be at the same rate as the cost quoted per man-day.
 - b. Airfares round trip economy class between the Supervisor 's home office and Bangkok by the most expeditious and direct route.
3. Local transportation from and to installation site will be provided by EGAT.
4. If the working man-days are less than the quoted total man-days, the payment shall be on the basis of actual man-days.
5. For man-days exceeding the quoted total amount, no payment shall be made by EGAT. Any such additional man-days approved by EGAT shall be paid on the quoted man-days rate.

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 ทชตส-ท.
 29 มิ.ย. 2564

- Project 1-C1 -


 นางสาวดารัตน์ ไชยพันธ์
 ทชต.
 12 มิ.ย. 64

filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03

**Schedule 1 (Option) : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price (excluding VAT) Baht	
					Unit Price	Amount
1-73	SPECIAL TOOLS AND APPLIANCES FOR COMPLETE INSTALLATION AND MAINTENANCE FOR IEC61850 BASED SUBSTATION (PLEASE GIVE DETAILS.)	- Specification No.1008 - Drawing Nos. STU-E-1, STU-E-2.1 sh.1&2, STU-E.2.2, STU-E-3 sh.1&2&3, TP-E-20.1, TP-E-20.2 sh.1&2, TP-E-20.3, TP-E-20.4, TP-E-20.5 and TP-E-20.6 sh.1&2 - Breakdown price of each equipment shall be provided in Table: Breakdown Price for item 1-72 and 1-73 - Details of each equipment shall be submitted with tender documents during the bidding.	1	SET		

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29 มิ.ย. 2564

- Project 1-C1 -

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23 มิ.ย. 64


filename : TS12-DSS-03

MEDIUM COST FOR BID NO. TS12-DSS-03

**Schedule 1 (Option) : 115 kV Digital Substation Protection and Automation Equipment
SUPPLY OF DIGITAL SUBSTATION PROTECTION AND AUTOMATION SYSTEM
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Supply of Equipment	
					Local Supply	
					Ex-works Price (excluding VAT) Baht	
					Unit Price	Amount
1-74	SPECIAL TOOLS AND APPLIANCES FOR COMPLETE INSTALLATION AND MAINTENANCE FOR IEC61850 BASED SUBSTATION (PLEASE GIVE DETAILS.)	- Specification No.1008 - Drawing Nos. MM2-E-1 sh.1&2, MM2-E-2.1, MM2-E-2.2, MM2-E-3 sh.1&2 TP-E-20.1, TP-E-20.2 sh.1&2, TP-E-20.3, TP-E-20.4, TP-E-20.5 and TP-E-20.6 sh.1&2 - Breakdown price of each equipment shall be provided in Table: Breakdown Price for item 1-72 and 1-73 - Details of each equipment shall be submitted with tender documents during the bidding.	1	SET		

เรทวิทย์พร พงษ์ภักดิ์
นางสาวท้อยภัทร พูนผลกุล
พชคส-น.
29 มิ.ย. 2564


นางสุภารัตน์ ไชยพันธ์
อรส.

Commercial Terms for Supply of Equipment and System Design

This Section consists of provisions that are specific to supply of Equipment and system design.

1. Supplementary Terms and Conditions

The following terms and conditions supplement the information or requirements included in Bidding Documents.

1.1 Article F-8. Payment

Payment for System Design

1. Seventy (70) per cent of the Contract Price of each Schedule of system design will be paid against presentation of Drawing and Document Acceptance Certificate to be issued by EGAT to certify the receipt of all drawings and documents required from the Contractor under Article F-11. Drawings and Documents to be Furnished by Contractor for such schedule, provided that payment shall not be made until EGAT has received from the Contractor the statement or delivery order and appertaining documents giving evidence of delivery of the main Equipment of that Schedule.

2. Thirty (30) per cent of the Contract Price of each Schedule of system design will be paid after the Equipment supplied and designed under this Contract have been installed, tested and operated or used successfully for a period of 30 Days and the acceptance of the said Equipment has been made by EGAT against presentation of Acceptance Certificate to be issued by EGAT.

However, if, through no fault of the Contractor or of the system design, such installation, test and operation or use of the said Equipment are delayed beyond a period of six (6) Months after complete ex-works delivery; payment of this thirty (30) per cent will be made as soon as possible but not later than the ninth (9th) Month after complete delivery.

Payment for Training Course

One hundred (100) per cent of each item of training course will be paid against signed invoice approved for payment by EGAT.

1.2 Article F-11. Drawings and Documents to be Furnished by Contractor

Drawings and Documents to be Furnished by Contractor (For Item No. 1-24, 1-48, 1-71 and 1-72)

The Contractor shall submit by registered mail with the drawings and other documents listed below by the designated deadlines :

Drawings/Documents	No. of copies		Deadline and Remarks
	P	CD-ROM	
<i>Training Schedule</i>			
- for Conceptual design (Item No. 1-71)	3	-	Within ...60.... Days after <i>confirmation Letter of Award of Contract</i>
- for Testing procedures (Item No. 1-72)	3	-	Within ...8.... Months after <i>confirmation Letter of Award of Contract</i>
Drawings or Documents “FOR APPROVAL”	2	-	Within ...90.... Days after <i>confirmation of Letter of Award of Contract</i>
Drawings or Documents “FOR REAPPROVAL”	2	-	Within ...30.... Days after receipt of returned approval drawings for correction
Drawings “DRAFT-FINAL DRAWING”	2	1	Within ...30.... Days for P and 60 Days for CD-ROM after receipt of returned approved drawings
Drawings and Documents “FINAL DRAWING or FINAL DOCUMENT”	3	1	Within ...10.... Months after <i>confirmation of Letter of Award of Contract</i>

Note :

P	=	Print Drawing or Document
RD	=	Master Reproducible Drawing
CD-ROM	=	Compact Disc-Read Only Memory with capacity of approximate 700 Mbytes conforming to ISO 9660

2. Revision of Terms and Conditions

The following terms and conditions contain revisions of the information or requirements included in Bidding Documents.

2.1 Article B-2. Bid Prices, Source of Supply and Service

- C. Prices for services including ***cost of system design***, cost of installation supervisor, and ***cost of training course*** shall be firm.

2.2 Article B-12. Evaluation and Comparison of Bids

4. The prices to be used for evaluation and comparison purpose shall be as follows:
 1. Ex-works price including VAT for the final sale direct to EGAT for locally manufactured Equipment
 2. CFR Thai Port of Equipment to be imported plus the calculated insurance premium of 0.0554% of [CFR price+10% (CFR price)], import duty, excise tax (if any), value added tax to be assessed by the Thai Government at the port of entry for imported Equipment , and 0.6 % of CFR price for customs clearance

The rate of import duty to be used for price comparison shall be as follows:

- a) For Equipment consisting of separate components which are intended to contribute together as a functional unit and imported under partial import entry - using a normal single tariff rate published in the Customs Tariff Decree for such Equipment
- b) For other Equipment and spare parts
 - i) In case any imported Equipment and spare part is proposed from one (1) country of origin for the same item:
 - Country of Origin Under Free Trade Agreement (FTA) – using lower comparing rate between the FTA rate and the normal rate published in the Customs Tariff Decree;
 - Country of Origin Under Non FTA – using a normal rate published in the Customs Tariff Decree.
 - ii) In case any imported Equipment and spare part is proposed from different countries of origin for the same item, a normal rate published in the Customs Tariff Decree for such Equipment and spare part will be used for price comparison.
3. Cost of local transportation including VAT, if any
4. Cost of installation supervisor including VAT, if any
5. Guaranteed losses of Equipment, if any, at the rate as stipulated in the Proposal Data.
- 6. Cost of system design including VAT.**
- 7. Cost of training course including VAT.**

2.3 Section C Part 1 : Price Proposal - Price Quotation Instructions

Cost of Supply of Equipment *and services* comprises Foreign Portion and Local Portion. For Foreign Portion, Bidder is allowed to quote price in only four (4) different currencies. For Local Portion, default currency is Baht (THB).

2.4 Article E-1. Definitions

Work : All the work to be done by the Contractor for design manufacture, shop test, transportation, and delivery of the Equipment ex-works, FOB Port of Shipment/Vessel or CFR Thai Port or at EGAT's store/site as agreed, including, if required, *system design, training course*, supervision for installation at site and supervision for field tests of the Equipment under the Contract.

2.5 Article E-5. Patents and Copyrights

The Contractor shall indemnify and hold EGAT, its officers, agents, and employees harmless against and from liability of any nature or kind, including costs and expenses for or on account of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article, or appliance manufactured, delivered, or used in carrying out the Work under the Contract. All drawings, *systems designed* and the information contained therein as well as the use of any process, material or Equipment developed in the course of carrying out the Work under the Contract shall become the property of EGAT where EGAT shall have the right to use any or all of them for any purpose either for present or future projects. For the avoidance of doubt, none of them will be used solely for any commercial benefit which is not related to EGAT work.

2.6 Article F-10. Maintenance Guarantee and Article F-12. Maintenance Security

Terms and conditions regarding maintenance guarantee and maintenance security specified in Article F-10. Maintenance Guarantee, F-12. Maintenance Security, and elsewhere in Bidding Documents shall not apply to system design. The amount of maintenance security shall be ten (10) per cent of the total Contract Price or ten (10) per cent of each schedule excluding the *cost of system design*, cost of installation supervisor, *cost of training course* and cost of test(s). With such exclusion, the specimen of maintenance guarantee in page F-16 of Bidding Documents shall be deleted and replaced with the specimen shown in the following page. Apart from this exclusion of system design, other terms and conditions regarding maintenance guarantee and maintenance security remain the same as specified in Bidding Documents.

SPECIMEN OF MAINTENANCE GUARANTEE

To :

Date :

Electricity Generating Authority of Thailand
Bangkruai, Nonthaburi 11130
Thailand

Re : Maintenance Security for Contract
No. EGAT _____

Gentlemen :

In accordance with the provision of the Contract for _____ No. EGAT _____ dated _____ (hereinafter referred to as the Contract), the contents of which have been noted by us that Messrs. _____ (hereinafter referred to as the Contractor) has to deposit with Electricity Generating Authority of Thailand, (hereinafter referred to as EGAT) a Maintenance Security to guarantee the proper functioning of the _____ of the Contract as specified in Article F-xx. Maintenance Guarantee in the amount of _____ (in words : _____) which is equivalent to ten (10) per cent of the total Contract Price or ten (10) per cent of each schedule of the said Work, excluding the *cost of system design*, cost of installation supervisor, *cost of training course* and cost of test(s), we, the _____ as instructed by the Contractor, agree unconditionally to irrevocably guarantee as primary Obligor, the payment to EGAT at its first demand, without whatsoever right of objection on our part and without its first claim with the Contractor giving EGAT the right of claim for penalty, damages, liquidated damages or any expenses for which the Contractor may become liable to EGAT under the Contract.

We further agree that no extension of time, change in, addition to or other modification of terms of the Contract or work to be performed thereunder, or of the Specifications or other Contract Documents, which may be made between EGAT and the Contractor, shall in any way release us from any liability under the Maintenance Security, and we shall thereby waive notice of any such extension of time, change, addition or modification.

This Maintenance Security shall be valid and remain in full effect for a period of _____ (...) Year(s) from the day immediately following the date of the acceptance of Equipment. If necessary, this Maintenance Security shall be extended as specified in Article F-xx. Maintenance Guarantee.

Yours very truly,

Authorized Signature

DATA SHEET

for

Invitation to Bid No. TS12-DSS-03

This section consists of provisions that are specific to each procurement and supplement the information or requirements included in bidding documents.

Provisions not Applicable

All provisions and words related to Foreign Supply shall not apply to this Invitation to Bid.

Article B-3. Bid Security

The amount of bid security shall be THB 4,605,000.-.

Article B-4. Validity of Bids

The validity of the bid shall be for one hundred and fifty (150) Days from the date specified for opening of bid.

Article B-8. Information to be Submitted with Bid

Item m. is not applicable

Article B-12. Evaluation and Comparison of Bids:

The evaluation of bid prices shall be on schedule basis.

Article E-29. Failure to Meet Requirements and F-10. Maintenance Guarantee

The Contractor shall guarantee the proper functioning of Equipment for a period of two (2) Years.

Defective Equipment to be replaced with the whole new set

None

Article F-9. Liquidated Damages for Late Delivery of Equipment

The Liquidated Damages shall be at the rate of one-tenth of one (0.10) per cent of the price of each complete Schedule of Equipment not timely delivered for each Day of delay. This sum is payable regardless of the actual loss and/or damages incurred.

INVITATION TO BID NO. TS12-DSS-03

**SUPPLY OF DIGITAL SUBSTATION PROTECTION AND
AUTOMATION SYSTEM**

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

A-1. Invitation

The Electricity Generating Authority of Thailand (EGAT) hereby invites sealed bids for furnishing and delivering of Digital Substation Protection and Automation System under Transmission System Expansion Project No. 12 hereinafter called Equipment in accordance with the terms, conditions and Specifications described in these Bidding Documents.

A-2. Eligibility of Bidders: General Requirements

All Bidders shall meet the following requirements; failure to so comply shall constitute sufficient ground for rejection.

- a. The Bidder shall be a partnership, firm or company, either alone or in joint venture or in consortium.
- b. The Bidder shall be a purchaser of the bidding documents from EGAT. For a joint venture or consortium, only one (1) member of the joint venture or consortium is required to purchase the bidding documents.

In the case where the Bidder is not the purchaser of the bidding documents, the purchaser shall notify EGAT of the name of the Bidder in writing *prior to the bid opening*.

- c. The Bidder shall be well-established and maintain a permanent place of business. For a joint venture or consortium, all members of the joint venture or consortium are required to meet this qualification.
- d. The Bidder shall not be named in the List of Work Abandoners published by the Permanent Secretary, Ministry of Finance, and/or in the Debarment List and/or in the List of Work Abandoners declared by EGAT.
- e. For the Bidder who changes name before submitting the bid, his experience records in previous name shall be considered as the experience records of the Bidder.

- f. The Bidder shall not be a Jointly Interested Bidder with other Bidders as from the date of EGAT's issuance of this invitation to bid, or shall not be a person who undertakes any action as an "Obstruction of Fair Price Competition" as defined in Additional Regulation for this invitation.
- g. The Bidder shall not either be EGAT's consultant or involve in EGAT's consultancy company under this invitation, or have EGAT's personnel involved in his business as shareholder having voting right that can control his business, director, manager, officer, employee, agent or consultant except the ones who are officially ordered by EGAT to act or participate therein.
- h. The Bidder shall not be the person who is privileged or protected not to be taken any legal proceeding under Thai court; provided that such Bidder's government declares that such special privilege is waived.
- i. In case of a joint venture or consortium, the Bidder shall carry out all the provision of the Equipment and all Work under such formation from the time of bidding until the fulfillment of the Contract and the parties to the joint venture or the consortium shall accept joint and several liability for performing all obligations under the bid and the Contract.
- j. The Bidder shall not propose to supply the Equipment from the country under the state of war whether declared or not.
- k. The Bidder shall have adequate fund to meet financial obligations incidental to this Contract.
- l. The Bidder shall submit documentary evidence established in accordance with Article B-8. Information to be Submitted with Bid to demonstrate the Bidder's sufficient eligibility to bid and qualification to perform the Contract.

A-3. Eligibility of Bidders: Technical Requirements

I. All Bidders shall meet the following requirements; failure to so comply shall constitute sufficient ground for rejection.

- a. The Bidder shall manufacture or supply the Equipment or Work as required under this invitation to bid.

- b. If the Bidder is a new company formed by acquisition of or merger with other companies or business units before submitting the Bid, the experience records of any of such previous companies or business units that meet the requirements set forth herein are acceptable as the experience records of the Bidder.

Reference records of either the parent or affiliated companies shall not be considered as the record of such Bidder.

- c. The Bidder shall have no just or proper claims pending against him with respect to breach in the performance of Contract on other similar works awarded by EGAT.

If the Bidder is a new company formed by acquisition of or merger with other companies or business units, the pending claim of any of such previous companies or business units shall be considered as pending claim of the Bidder.

- d. The Bidder shall have sufficient capacity to carry out the Work.
- e. The Bidder shall propose the Equipment manufactured by the qualified manufacturers who shall fulfill the following requirements:

- 1. Being well-established and maintaining a permanent place of business.
- 2. Regular manufacturing of the Equipment of the type and similar rating proposed.
- 3. For Merging Unit, having one of the following qualifications:
 - 3.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT

OR

- 3.2 Having supply records of at least three (3) substations of the type proposed with at least three (3) consecutive years of successful operation at nominal system voltage of 110 kV or above in an oversea country (not his own country)
- 4. For 230 kV Control and Protection System and below, having the following qualifications:
 - 4.1 Being local manufacturer
 - 4.2 Having one of the following qualifications:
 - 4.2.1 Having supply records of successful operation of at least three (3) units of each type of Protective Relay Panels of which the characteristics are similar to the ones specified herein in EGAT's or other Electricity Authorities of Thailand's 220 kV or above Transmission System for at least three (3) consecutive years.

OR

4.2.2 Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein.

5. For Supervisory Software of IEC 61850 Based Substation Control and Protection system:

Having supply record of implementing supervisory software in IEC 61850 based substation control and protection system which comprises at least two (2) manufactures of protective Intelligent Electronic Device (IED) with successful operation and use of at least one (1) year.

6. For substation control and protection system integrator:

Having practical experiences on design and implementation of an IEC 61850 based control and protection system including both station bus and process bus of at least two (2) 110 kV or above substations which shall be in successful operation for at least two (2) years. The substation shall be an overseas utility.

7. The proposed protective relays shall be the products from the manufacturers as listed in EGAT ACCEPTED MANUFACTURER LIST FOR PROTECTIVE RELAY and shall be in compliance with the details specified in EGAT's Specifications. Type/Model of the proposed main protective relays shall be as specified in EGAT ACCEPTED MAIN RELAY LIST No. 1 which is attached at the end of Section A. Invitation to Bid.

8. For Fault Recording System (FRS).

8.1 Having one of the following qualifications:

8.1.1 The cabinet and all Equipment are completely wired by the FRS manufacturer before shipping to Thailand.

OR

8.1.2 The cabinet and the equipment are wired in Thailand by the local cabinet manufacturer who has one of the following qualifications:

8.1.2.1 Having supply records of successful manufacturing/operation/use of at least three (3) units of the FRS cabinet in EGAT's Transmission System for at least three (3) consecutive years. The characteristics of the said FRS cabinets shall be as specified in "Specification No. 1003: Fault Recording System".

OR

8.1.2.2 Having a letter of acceptance for manufacturing of Control and Protection Boards and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein.

The design and engineering shall be performed by the FRS manufacturer. The assembly, factory test and commissioning shall be in accordance with the FRS manufacturer's standard and shall be performed under the FRS manufacturer's supervisor.

8.2 The proposed FRS shall be the product from the manufacturers as listed in EGAT ACCEPTED MANUFACTURER LIST FOR FAULT RECORDING SYSTEM which is attached at the end of Section A. Invitation to Bid and shall be in compliance with the details specified in EGAT's Specifications.

9. If the manufacturer is a new company formed by acquisition of or merger with other companies or business units, and any of such previous companies or other business units has the experience records that meet the requirements set forth herein, such experience records are acceptable as the experience records of the new company.

10. Having no just or proper claims pending against Equipment on other similar works.

In case the manufacturer is a new company formed by acquisition of or merger with other companies or business units, the pending claim of any of such previous companies or business units shall be considered as pending claim of the manufacturer.

II. All Bidders should preferably meet the following technical requirements; failure to so comply may constitute sufficient ground for rejection.

- a. Type/Model of the proposed protective relays shall be as specified in EGAT ACCEPTED MAIN RELAY LIST No. 2 which is attached at the end of Section A. Invitation to Bid.
- b. Type/model of the proposed FRS shall be as specified in EGAT ACCEPTED FAULT RECORDING SYSTEM LIST which is attached at the end of section A. Invitation to Bid.

A-4. Joint Venture or Consortium

In the event that the successful Bidder is a joint venture or a consortium formed of two or more companies, EGAT requires that the parties to the joint venture or the consortium accept joint and several liability for all obligations under the Contract.

A-5. Preparation and Delivery of Bids

Bids shall be prepared in accordance with the Instructions to Bidders contained in the Bidding Documents in one (1) original and three (3) hard copies in English, on the bid forms included for this purpose and shall be accompanied with a bid security as required under the Article pertaining to Bid Security in Section B. Instructions to Bidders. The bid security will be placed in a separate sealed envelope.

The envelope of the bids will be marked in capital letters in the lower left-hand corner as follows :

INVITATION TO BID NO. TS12-DSS-03

**SUPPLY OF DIGITAL SUBSTATION PROTECTION AND
AUTOMATION SYSTEM**

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

and shall be addressed and delivered to :

International Procurement Department - Transmission Segment
Procurement and Inventory Management Division
Electricity Generating Authority of Thailand
Bangkruai, Nonthaburi 11130
Thailand

on or before 10:00 a.m., Bangkok Standard Time,*see Tentative Schedule*.....

If the envelope(s) is not sealed, marked and addressed as required above, EGAT will assume no responsibility for the bid misplacement or premature opening.

Bids will be opened publicly at ***Bidding Room, 1st floor, Tor 082 Building*** and at the time specified above.

Bids received after the time stipulated herein shall be rejected and returned unopened.

A-6. Availability of Bidding Documents

The Bidding Documents in CD-ROM are available for examination and can be obtained from EGAT at the hereunder address upon payment to EGAT, non-refundable, in the amount of USD..... or Baht 2,000.-. These prices include the value added tax.

International Procurement Department - Transmission Segment
Procurement and Inventory Management Division
Electricity Generating Authority of Thailand
Bangkruai, Nonthaburi 11130
Thailand

EGAT ACCEPTED MANUFACTURER LIST FOR PROTECTIVE RELAY

Description	Manufacturer / Country
Protective Relay	ABB / Sweden, Switzerland, USA
	GE / USA, Canada, Spain, UK
	SEL / USA
	Siemens / Germany
	Reyrolle / UK
	Toshiba / Japan, Vietnam
	Schneider Electric / France, UK
	ZIV / Spain
	INGETEAM / Spain
	NR Electric / China
	Mitsubishi / Japan
	Protecta / Hungary

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EGAT ACCEPTED MAIN RELAY LIST No.1

Description	Manufacturer	Accepted Type	Accepted Voltage Level			Notes
			500 kV	230 kV	115&69 kV	
Current Differential Protection	ABB	RED670 (*)	✓	✓	✓	
	GE	P543 (*)	✓	✓	✓	
		L90 (*)	✓	✓	✓	
	SEL	SEL-311L (***)	✓	✓	✓	
		SEL-411L (*)	✓	✓	✓	
	Siemens	7SD52 (***)	✓	✓	✓	
	Schneider Electric	P543 (**)	✓	✓	✓	
	Ingeteam	EF-LD (*)	✓	✓	✓	
NR Electric	PCS-931 (**)	✓	✓	✓		
Distance Protection	ABB	REL670 (*)	✓	✓	✓	
	GE	P443 (***)	✓	✓	✓	
		D30 (*)			✓	Only for three-pole tripping and line protection without carrier scheme.
		D60 (*)		✓	✓	
		ALPSDA1	✓	✓	✓	
	SEL	SEL-311C (***)			✓	Only for three-pole tripping and line protection without carrier scheme.
		SEL-421 (*)	✓	✓	✓	
		SEL-411L (*)	✓	✓	✓	
	Siemens	7SA522 (***)	✓	✓	✓	
		7SA6 series (***)	✓	✓	✓	
		7SA87 (*)	✓	✓	✓	
	Schneider Electric	P443 (**)	✓	✓	✓	
	Ingeteam	EF-ZT (*)	✓	✓	✓	
NR Electric	PCS-902 (*)	✓	✓	✓		

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EGAT ACCEPTED MAIN RELAY LIST No.1

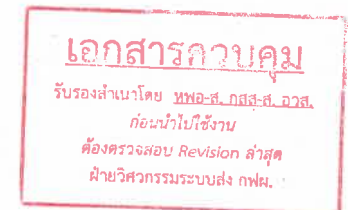
Description	Manufacturer	Accepted Type	Accepted Voltage Level			Notes
			500 kV	230 kV	115&69 kV	
Distance Protection	Toshiba	GRZ200 (***)		✓	✓	
	ZIV	ZLV (***)		✓	✓	
Transformer Differential Protection	ABB	RET670 (*)	✓	✓	✓	
		RET650 (*)	✓	✓	✓	3-restraints
	GE	P64x (*)	✓	✓	✓	
		T35 (*)		✓	✓	
		T60 (*)		✓	✓	
	SEL	SEL-387		✓	✓	4-restraints
		SEL-487E (*)	✓	✓	✓	
		SEL-587			✓	2-restraints
		SEL-787 (***)			✓	2-restraints
	Siemens	Duobias (***)		✓	✓	
		7UT6 (***)	✓	✓	✓	5-restraints
		7UT82 (*)	✓	✓	✓	2-restraints
		7UT86 (*)	✓	✓	✓	3-restraints
	Schneider Electric	P645 (**)	✓	✓	✓	
	Ingeteam	EF-TD (*)	✓	✓	✓	3-restraints
	NR Electric	PCS-978 (*)	✓	✓	✓	
Toshiba	GRT200 (***)	✓	✓	✓		
ZIV	IDV (***)	✓	✓	✓		
Mitsubishi	MRD-HA (***)			✓	3-restraints	
High Impedance Busbar Protection	ABB	REB650 (*)	✓	✓	✓	
	SEL	SEL-587Z	✓	✓	✓	
	Toshiba	GRB150	✓	✓	✓	

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EGAT ACCEPTED MAIN RELAY LIST No.1

Description	Manufacturer	Accepted Type	Accepted Voltage Level			Notes
			500 kV	230 kV	115&69 kV	
Low Impedance Busbar Protection	ABB	REB670 (*)	✓	✓	✓	
		REB500	✓	✓	✓	
	GE	P746 (**)	✓	✓	✓	
		P740 (**)	✓	✓	✓	
		P747 (***)	✓	✓	✓	
		B90 (*)	✓	✓	✓	
		B30 (*)	✓	✓	✓	Only for breaker and a half, double bus double breaker or main and transfer bus arrangement.
	SEL	SEL-487B (*)	✓	✓	✓	
	Siemens	7SS52 (***)	✓	✓	✓	
		7SS60 (***)	✓	✓	✓	Only for breaker and a half, double bus double breaker or main and transfer bus arrangement.
		7SS85 (*)	✓	✓	✓	
	Schneider Electric	P746 (*)	✓	✓	✓	
		P740 (***)	✓	✓	✓	
	Toshiba	GRB100	✓	✓	✓	
	Mitsubishi	MBP-H1A (***)		✓	✓	In case of double bus single breaker arrangement, maximum 8 feeders with 1 bus coupler and 2 bus sections are allowed.

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EGAT ACCEPTED MAIN RELAY LIST No.1

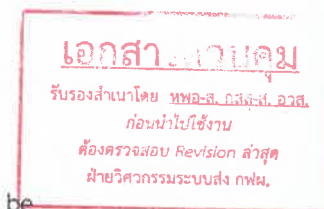
Description	Manufacturer	Accepted Type	Accepted Voltage Level			Notes
			500 kV	230 kV	115&69 kV	
Breaker Failure Protection	ABB	REQ650 (*)			✓	
	GE	P141 (***)			✓	Only for 3-phase breaker failure function.
		P14Nx (***)	✓	✓	✓	
		C60 (*)		✓	✓	
		F60 (*)		✓	✓	
	SEL	SEL-501			✓	Only for 3-phase breaker failure function.
	Siemens	7VK6 series (***)	✓	✓	✓	
		7SJ82 (*)			✓	Only for 3-phase breaker failure function.
	Schneider Electric	P821		✓	✓	Only firmware version 1.F is accepted.
	Ingeteam	EF-ZT (*)	✓	✓	✓	
	NR Electric	PCS-9611 (*)			✓	Only for 3-phase breaker failure function.
	Toshiba	GRD200 (***)	✓	✓	✓	
ZIV	IRL (***)			✓	Only for 3-phase breaker failure function.	

Remarks

- (*) Applicable to IEC 61850 for both station bus and process bus with the certification specifying that the said relay conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1" and is issued by the third party laboratory.
- (**) Applicable to IEC 61850 for both station bus and process bus (no certification).
- (***) Applicable to IEC 61850 only for station bus.

Notes

1. The procedures for being listed in EGAT ACCEPTED MAIN RELAY LIST are specified in the EGAT's Pre-Qualification (PQ) process, of which the details can be provided by Transmission System Engineering Division on request.
2. If any types of relay in the list are planned to discontinue the manufacturing, the manufacturer or the representative is responsible for informing EGAT at least 1 year before the unavailable date.
3. The relays shall be configured to comply with all EGAT's required functions.



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EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Directional Overcurrent Relay	ABB	REQ650 (*)	✓	✓	✓	✓	
	GE	P14Dx (***)	✓	✓	✓	✓	
		P841 (***)	✓	✓	✓	✓	
	SEL	SEL-351A (***)	✓	✓	✓	✓	
		SEL-451 (*)	✓	✓	✓	✓	
		SEL-751 (***)	✓	✓	✓	✓	
	Siemens	7SJ62 (***)	✓	✓	✓	✓	
		7SJ85 (*)	✓	✓	✓	✓	
		7SJ82 (*)	✓	✓	✓	✓	
	Schneider Electric	P141 (***)	✓	✓	✓	✓	
		P143 (***)	✓	✓	✓	✓	
	Ingeteam	EF-MD (*)	✓	✓	✓	✓	
		DA-PT (*)	✓	✓	✓	✓	
	NR Electric	PCS-9611 (*)				✓	None of line fault locator. Only use with feeder.
	Toshiba	GRE140 (***)	✓	✓	✓	✓	
GRD200 (***)		✓	✓	✓	✓		
ZIV	IRV (***)		✓	✓	✓		
Overcurrent Relay	ABB	REQ650 (*)	✓	✓	✓	✓	
	GE	P141 (***)	✓	✓	✓	✓	
		P14Dx (***)	✓	✓	✓	✓	
		P14Nx (***)	✓	✓	✓	✓	
		P841 (***)	✓	✓	✓	✓	
		F60 (*)	✓	✓	✓	✓	
		F650 (***)	✓	✓	✓	✓	
		SR350 (***)	✓	✓	✓	✓	

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EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Overcurrent Relay	SEL	SEL-351A (***)	✓	✓	✓	✓	
		SEL-451 (*)	✓	✓	✓	✓	
		SEL-551	✓	✓	✓	✓	
		SEL-751 (***)	✓	✓	✓	✓	
		SEL-751A (***)	✓	✓	✓	✓	
	Siemens	7SJ61 (***)	✓	✓	✓	✓	
		7SJ62 (***)	✓	✓	✓	✓	
		7SJ85 (*)	✓	✓	✓	✓	
		7SJ82 (*)	✓	✓	✓	✓	
	Schneider Electric	P120	✓	✓	✓	✓	
		P122	✓	✓	✓	✓	
		P141 (***)	✓	✓	✓	✓	
		P143 (***)	✓	✓	✓	✓	
	Ingeteam	EF-MD (*)	✓	✓	✓	✓	
		DA-PT (*)	✓	✓	✓	✓	
	NR Electric	PCS-9611 (*)			✓	✓	Only for three-pole tripping.
	Toshiba	GRE140 (***)	✓	✓	✓	✓	
		GRD200 (***)	✓	✓	✓	✓	
ZIV	IRV (***)		✓	✓	✓		
	IRL (***)	✓	✓	✓	✓		
Synchronism Check Relay	ABB	REQ650 (*)	✓	✓	✓		Only product version 2.1 is accepted.
		SPAU140C	✓	✓	✓		
	GE	P841 (***)	✓	✓	✓		
		F60 (*)	✓	✓	✓		
		F650 (***)	✓	✓	✓		

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EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Synchronism Check Relay	SEL	SEL-279H	✓	✓	✓		
		SEL-351A (***)	✓	✓	✓		
		SEL-451 (*)	✓	✓	✓		
		SEL-751 (***)	✓	✓	✓		
		SEL-751A (***)	✓	✓	✓		
	Siemens	7VK61 (***)	✓	✓	✓		
		7SJ85 (*)	✓	✓	✓		
		7SJ82 (*)	✓	✓	✓		
	Ingeteam	EF-MD (*)	✓	✓	✓		
		DA-PT (*)	✓	✓	✓		
	NR Electric	PCS-9611 (*)	✓	✓	✓		
Toshiba	GRD200 (***)	✓	✓	✓			
Auto Reclosing Relay	ABB	REQ650 (*)	✓	✓	✓		
	GE	P841 (***)	✓	✓	✓		
		F60 (*)			✓		Only for three-pole reclose
		F650 (***)			✓		Only for three-pole reclose
		DRS			✓		Only for three-pole reclose
	SEL	SEL-279H			✓		Only for three-pole reclose
		SEL-351A (***)			✓		Only for three-pole reclose
		SEL-451 (*)			✓		Only for three-pole reclose
		SEL-751 (***)			✓		Only for three-pole reclose
	Siemens	7VK512 (***)	✓	✓	✓		
		7VK61 (***)	✓	✓	✓		
		7SJ82 (*)			✓		Only for three-pole reclose

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EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Auto Reclosing Relay	Ingeteam	EF-ZT (*)	✓	✓	✓		Only for three-pole reclose
	NR Electric	PCS-9611 (*)			✓		
	Toshiba	GRD200 (***)	✓	✓	✓		
Overfluxing Relay	Ingeteam	EF-TD (*)	✓	✓	✓		
Frequency Relay	GE	P94Vx (***)	✓	✓	✓	✓	
		MIV		✓	✓	✓	
	SEL	SEL-351A (***)	✓	✓	✓	✓	
		SEL-451 (*)	✓	✓	✓	✓	
		SEL-751 (***)	✓	✓	✓	✓	
		SEL-751A (***)	✓	✓	✓	✓	
	Siemens	7SJ85 (*)	✓	✓	✓	✓	
		7SJ82 (*)	✓	✓	✓	✓	
	Ingeteam	EF-MD (*)	✓	✓	✓	✓	
		DA-PT (*)	✓	✓	✓	✓	
	NR Electric	PCS-9611 (*)	✓	✓	✓	✓	
ZIV	IRL (***)	✓	✓	✓	✓		
Under/Overtoltage Relay	GE	MIV		✓	✓	✓	None of VT input (open delta connection) for 59N.
		P94V (***)	✓	✓	✓	✓	
	SEL	SEL-351A (***)	✓	✓	✓	✓	
		SEL-751 (***)	✓	✓	✓	✓	
		SEL-751A (***)	✓	✓	✓	✓	
	Siemens	7SJ62 (***)	✓	✓	✓	✓	
		7SJ85 (*)	✓	✓	✓	✓	
7SJ82 (*)		✓	✓	✓	✓		

เอกสารแนบ
 รับรองสำเนาโดย ทพอ.ส. กสส.ส. อวส.
 ก่อนนำไปใช้งาน
 ต้องตรวจสอบ Revision ล่าสุด
 ฝ่ายวิศวกรรมระบบส่ง กฟผ.

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EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Under/Overvoltage Relay	Schneider Electric	P141 (***)	✓	✓	✓	✓	
		P143 (***)	✓	✓	✓	✓	
	Ingeteam	EF-MD (*)	✓	✓	✓	✓	
		DA-PT (*)	✓	✓	✓	✓	
	NR Electric	PCS-9611 (*)		✓	✓	✓	Only for C-bank protection.
	Toshiba	GRD200 (***)	✓	✓	✓	✓	
	ZIV	IRV (***)	✓	✓	✓	✓	

Remarks

- (*) Applicable to IEC 61850 for both station bus and process bus with the certification specifying that the said relay conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1" and is issued by the third party laboratory.
- (**) Applicable to IEC 61850 for both station bus and process bus (no certification).
- (***) Applicable to IEC 61850 only for station bus.

Notes

1. The procedures for being listed in EGAT ACCEPTED MAIN RELAY LIST are specified in the EGAT's Pre-Qualification (PQ) process, of which the details can be provided by Transmission System Engineering Division on request.
2. If any types of relay in the list are planned to discontinue the manufacturing, the manufacturer or the representative is responsible for informing EGAT at least 1 year before the unavailable date.
3. The relays shall be configured to comply with all EGAT's required functions.

