Notice to Bidder

To comply with the ENGINEER ACT, B.E. 2542

FOR THE CONSTRUCTION WORK RELATED TO DESIGN OR CONSTRUCTION SUPERVISION WORK

The Contractors should be aware of the following:

1. The Contractor who is a juristic person is required to obtain a License to Practice the Controlled Engineering Profession issued by the Council of Engineers Thailand.
2. Where the Contractor is a joint venture or consortium, the Contractor shall comply with the following requirements: -
    1) In case of a joint venture, the joint venture is required to obtain a License to Practice the Controlled Engineering Profession issued by the Council of Engineers Thailand.
    2) In case of a consortium, only the member of the consortium who will be responsible for the Design or Construction Supervision Work is required to obtain a License to Practice the Controlled Engineering Profession issued by the Council of Engineers Thailand.

NOTE : If you have any questions, please contact COUNCIL OF ENGINEERS THAILAND.
Address : 1616/1 Ladprao, Wangthonglang, Bangkok, Thailand 10310
Telephone : 1303
Email : coe@saraban.mail.go.th

ประชาสัมพันธ์ผู้ประกอบการเพื่อทราบ

เพื่อให้การดำเนินงานสำหรับงานจ้างก่อสร้างที่มีลักษณะงานด้านการออกแบบหรือควบคุมงานก่อสร้าง สอดคล้องกับพระราชบัญญัติวิศวกร พ.ศ. 2542 จึงขอแจ้งแนวทางในการดำเนินงาน ดังนี้

1. ผู้รับจ้างที่เป็นนิติบุคคล ต้องเป็นผู้ที่ได้รับใบอนุญาตประกอบวิชาชีพวิศวกรรมควบคุมสำหรับนิติบุคคลจากสภาวิศวกร

2. ผู้รับจ้างที่ดำเนินการในรูปแบบของ “กิจการร่วมค้า”

(1) กรณีที่กิจการร่วมค้าได้จดทะเบียนเป็นนิติบุคคลใหม่ กิจการร่วมค้านั้นต้องเป็นผู้ที่ได้รับใบอนุญาตประกอบวิชาชีพวิศวกรรมควบคุมสำหรับนิติบุคคลจากสภาวิศวกร

(2) กรณีที่กิจการร่วมค้าไม่ได้จดทะเบียนเป็นนิติบุคคลใหม่ เฉพาะนิติบุคคลที่มีหน้าที่เป็นผู้รับผิดชอบงานวิศวกรรมออกแบบหรือควบคุม ต้องเป็นผู้ที่ได้รับใบอนุญาตประกอบวิชาชีพวิศวกรรมควบคุมสำหรับนิติบุคคลจากสภาวิศวกร

หมายเหตุ หากมีข้อสงสัย โปรดติดต่อ สภาวิศวกร

ที่อยู่ : 1616/1 ถนนลาดพร้าว แขวงวังทองหลาง เขตวังทองหลาง กรุงเทพมหานคร 10310

เบอร์ติดต่อ : 1303

อีเมล : coe@saraban.mail.go.th

EGAT's Privacy Notice on Procurement, Inventory Management and Contract Administration

Electricity Generating Authority of Thailand (EGAT) has performed the protection of the Personal Data regarding procurement, inventory management and contract administration to be in accordance with **the Personal Data Protection Act B.E. 2562** (the "2019 PDPA"), which comes into effect on June 1, 2022.

Details about EGAT's Privacy Notice on Procurement, Inventory Management and Contract Administration are available for you at https://www.egat.co.th/privacy-notice-procurement_en.html or the below QR Code.

The Redaction of Sensitive Personal Data

EGAT has announced the Privacy Notice on Procurement, Inventory Management and Contract Administration for the collection, use or disclosure of Personal Data, excluding the Sensitive Personal Data.

Should the documents you wish to submit to EGAT contain the Sensitive Personal Data as defined in Section 26 of the 2019 PDPA, pertaining to racial, ethnic origin, political opinions, cult, religious or philosophical beliefs, sexual behavior, criminal records, health data, disability, trade union information, genetic data, biometric data, or of any data which may affect you in the same manner, you shall redact or conceal such data before submitting to EGAT.

ประกาศความเป็นส่วนตัว (Privacy Notice) สำหรับการจัดซื้อจัดจ้าง การบริหารพัสดุ และการบริหารสัญญาของ กฟผ.

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย (กฟผ.) ได้ดำเนินการคุ้มครองข้อมูลส่วนบุคคลสำหรับการจัดซื้อจัดจ้าง การบริหารพัสดุ และการบริหารสัญญา เพื่อให้เป็นไปตาม**พระราชบัญญัติคุ้มครองข้อมูลส่วนบุคคลของประเทศไทย พ.ศ. 2562** (PDPA) ซึ่งมีผลบังคับใช้อย่างครบถ้วน ตั้งแต่วันที่ 1 มิถุนายน 2565 ทั้งนี้ ท่านสามารถศึกษารายละเอียดประกาศความเป็นส่วนตัว (Privacy Notice) สำหรับการจัดซื้อจัดจ้าง การบริหารพัสดุ และการบริหารสัญญา ได้ที่ https://www.egat.co.th/privacy-notice-procurement.html หรือที่ QR Code ด้านล่าง

การขีดฆ่าข้อมูลส่วนบุคคลอ่อนไหว

กฟผ. มีประกาศความเป็นส่วนตัว (Privacy Notice) สำหรับการจัดซื้อจัดจ้าง การบริหารพัสดุ และการบริหารสัญญา เพื่อใช้ในการเก็บรวบรวม ใช้ หรือเปิดเผย ข้อมูลส่วนบุคคล แต่ไม่เก็บข้อมูลส่วนบุคคลอ่อนไหว หากเอกสารของท่านที่ต้องส่งมอบให้ กฟผ. มีข้อมูลส่วนบุคคลอ่อนไหวตามที่ถูกบัญญัติไว้ในมาตรา 26 ของ PDPA ดังนี้ เชื้อชาติ เผ่าพันธุ์ ความคิดเห็นทางการเมือง ความเชื่อในลัทธิ ศาสนาหรือปรัชญา พฤติกรรมทางเพศ ประวัติอาชญากรรม ข้อมูลสุขภาพ ความพิการ ข้อมูลสหภาพแรงงาน ข้อมูลพันธุกรรม ข้อมูลชีวภาพ หรือข้อมูลอื่นใด ซึ่งกระทบต่อเจ้าของข้อมูลส่วนบุคคลในทำนองเดียวกันรวมอยู่ด้วย ขอให้ท่านขีดฆ่า หรือปกปิดข้อมูลดังกล่าว ก่อนส่งมอบให้แก่ กฟผ.

Notice to Bidder

Subject : Online Payment for Purchase of Bidding Documents

Please be informed of the online payment for purchase of biding documents as follows:

1) Download the Registration Form and fill out all necessary information by typing. (Complete data is required.)

2) 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.

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

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.

****

Registration Form

Invitation to Bid No. HSIS-S-02

Supply and Construction of 115 kV Pattani Substation (GIS),
Supply of Control and Protection Equipment for 115 kV Hat Yai 2 and 115 kV Yala 1 Substations
High Voltage Substation Improvement in the Southern Area for Terrorism and Flood Protection

Available Duration for Purchasing : December 27, 2023 - January 31, 2024

Price of Bidding Documents : USD 270.- or THB 8,000.-

Instructions

1) Fill out this Registration Form in English by typing. (Complete data is required.)
2) 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.
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	Ms. Pirada Sitthithaworn
Email address	pirada.s@egat.co.th
Telephone No.	66 2436 0342
Mobile No.	668 6887 9047

Invitation to Bid No. HSIS-S-02

Supply and Construction of 115 kV Pattani Substation (GIS), Supply of Control and Protection Equipment for 115 kV Hat Yai 2 and 115 kV Yala 1 Substations

High Voltage Substation Improvement in the Southern Area for Terrorism and Flood Protection

Two-Envelope (Pre-Qualification)

The Electricity Generating Authority of Thailand (EGAT) is calling for the subject Invitation to Bid to be financed by EGAT's fund. The escalation factor (K) for price adjustment is applied to this Bid.

Place of Construction : Pattani Substation (GIS)

Place of Delivery for Supply of Equipment : EGAT's Store at Songkhla

Medium Cost (including Value Added Tax and other expenses) : THB 829,000,000.-

Eligibility of Bidders

1. **The Bidder and the Equipment shall be named in EGAT Accepted List as specified in the bidding documents.**
2. The Bidder shall be a juristic person who provides such services 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.
3. 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.
4. 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.
5. 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.
6. 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 will be available for online purchase during 8:00 hrs. to 15:00 hrs., Bangkok Standard Time, as from December 27, 2023 to January 31, 2024 at USD 270.- or THB 8,000.- per copy, non-refundable.

Please find more details for online purchasing process at http://www4.egat.co.th/fprocurement/biddingeng/ or contact for further information at telephone no. 66 2436 0342 or procurement.tse@egat.co.th.

Delivery of Bids

Price and Technical Proposals shall be submitted at Bidding Room, 1st Floor, Tor 082 Building during 09:30 hrs. to 10:00 hrs., Bangkok Standard Time, March 5, 2024 and Technical Proposal will be opened publicly at 10:00 hrs.

ELECTRICITY GENERATING AUTHORITY OF THAILAND
December 27, 2023

Chattiya C.

(Miss Chattiya Chandhanayingyong)
Chief, International Procurement Department - Transmission Segment

ประกาศการไฟฟ้าฝ่ายผลิตแห่งประเทศไทย
เรื่อง ประกวดราคาจ้าง เลขที่ HSIS-S-02
ประกวดราคา 2 ซอง (Pre-Qualification)

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย (กฟผ.) มีความประสงค์จะจัดซื้อและจ้างก่อสร้างสถานีไฟฟ้าแรงสูง 115 kV ปัตตานี (GIS) และจัดซื้ออุปกรณ์ระบบควบคุมและป้องกันสำหรับสถานีไฟฟ้าแรงสูง 115 kV หาดใหญ่ 2 และสถานีไฟฟ้าแรงสูง 115 kV ยะลา 1 สำหรับแผนงานปรับปรุงสถานีไฟฟ้าแรงสูงในพื้นที่ภาคใต้ เพื่อป้องกันการเกิดวินาศกรรมและอุทกภัย โดยทำสัญญาแบบปรับราคาได้ (ค่า k) โดยใช้งบประมาณ กฟผ.

สถานที่ก่อสร้าง : สถานีไฟฟ้าแรงสูงปัตตานี (GIS)
สถานที่ส่งมอบสำหรับการจัดซื้ออุปกรณ์ : คลังพัสดุ กฟผ. สงขลา
ราคากลาง (รวมภาษีมูลค่าเพิ่มและค่าใช้จ่ายอื่นๆ) : 829,000,000.- บาท
คุณสมบัติของผู้เสนอราคา

1. **ต้องเป็นผู้ประกอบการและพัสดุที่ผ่านการคัดเลือกคุณสมบัติเบื้องต้นตามบัญชีรายชื่อที่ระบุในเอกสารประกวดราคา**
2. ต้องเป็นนิติบุคคลผู้มีอาชีพรับจ้างตามประกวดราคาจ้างดังกล่าว และต้องไม่เป็นผู้ทิ้งงานซึ่งปลัดกระทรวงการคลังได้แจ้งเวียนชื่อไว้ หรือต้องไม่เป็นผู้ที่ กฟผ. ห้ามติดต่อหรือห้ามเข้าเสนอราคา หรือต้องไม่เป็นผู้ที่ได้รับผลของการสั่งให้นิติบุคคลหรือบุคคลอื่นเป็นผู้ทิ้งงานตามคำสั่ง กฟผ.
3. ต้องไม่เป็นผู้มีผลประโยชน์ร่วมกันกับผู้เสนอราคารายอื่น ณ วันประกาศประกวดราคาครั้งนี้เป็นต้นไป หรือต้องไม่เป็นผู้กระทำการอันเป็นการขัดขวางการแข่งขันราคาอย่างเป็นธรรมในการดำเนินการประกวดราคาครั้งนี้
4. ต้องไม่เป็นที่ปรึกษาของ กฟผ. หรือมีส่วนร่วมในบริษัทที่ปรึกษาของ กฟผ. ในงานนี้ หรือต้องไม่มีผู้ปฏิบัติงาน กฟผ. เข้าไปมีส่วนร่วมในกิจการของผู้เสนอราคา ไม่ว่าจะในฐานะผู้ถือหุ้นที่มีสิทธิควบคุมการจัดการ กรรมการ ผู้อำนวยการ ผู้จัดการ พนักงาน ลูกจ้าง ตัวแทน หรือที่ปรึกษา ยกเว้น ในกรณีที่ผู้ปฏิบัติงานได้รับคำสั่งอย่างเป็นทางการจาก กฟผ. ให้ไปปฏิบัติงานหรือเข้าร่วมในกิจการของผู้เสนอราคา
5. ต้องไม่เป็นผู้ได้รับเอกสิทธิ์หรือความคุ้มกัน ซึ่งอาจปฏิเสธไม่ยอมขึ้นศาลไทย เว้นแต่รัฐบาลของผู้เสนอราคาได้มีคำสั่งให้สละสิทธิ์และความคุ้มกันเช่นว่านั้น
6. ผู้ประสงค์เข้าประกวดราคาในนามของกิจการร่วมค้าหรือกิจการค้าร่วม (Joint Venture or Consortium) จะต้องดำเนินการทุกขั้นตอนของการประกวดราคาในนามของกิจการร่วมค้าหรือกิจการค้าร่วม ตั้งแต่การเสนอราคาจนสิ้นสุดข้อผูกพันกับ กฟผ.

การขายเอกสารประกวดราคา

ผู้สนใจติดต่อซื้อเอกสารประกวดราคา ในราคาชุดละ 8,000.- บาท ในวันทำการระหว่างเวลา 08:00 น. ถึง 15:00 น. ตั้งแต่วันที่ 27 ธันวาคม 2566 ถึงวันที่ 31 มกราคม 2567 ทั้งนี้ สามารถดูรายละเอียดการซื้อเอกสารประกวดราคาได้ที่เว็บไซต์ http://www4.egat.co.th/fprocurement/biddingeng/ หรือสอบถามข้อมูลเพิ่มเติมได้ทางโทรศัพท์ หมายเลข 0 2436 0342 หรืออีเมล procurement.tse@egat.co.th

การยื่นซองประกวดราคา

กำหนดยื่นซองข้อเสนอด้านเทคนิคพร้อมซองราคา ในวันที่ 5 มีนาคม 2567 เวลา 09:30 น. ถึง 10:00 น. และเปิดซองข้อเสนอด้านเทคนิคเวลา 10:00 น. ณ ห้องประกวดราคา ชั้น 1 อาคารฝ่ายจัดซื้อจัดจ้างและบริหารพัสดุ ท.082 การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เขิงสะพานพระราม 7 จังหวัดนนทบุรี

ประกาศ ณ วันที่ 27 ธันวาคม 2566

(นางสาวฉัตติยา จันทนยิ่งยง)
หัวหน้ากองจัดซื้อจัดจ้างต่างประเทศสายงานระบบส่ง

ตารางแสดงวงเงินงบประมาณที่ได้รับจัดสรรและราคากลาง(ราคาอ้างอิง)

ในการจัดซื้อจัดจ้างที่มิใช่งานก่อสร้าง

1. **ชื่อโครงการ** Bid No. HSIS-S-02
   การจัดซื้อและจ้างก่อสร้างสถานีไฟฟ้าแรงสูง 115 kV ปัตตานี (GIS) และ
   จัดซื้ออุปกรณ์ระบบควบคุมและป้องกันสำหรับสถานีไฟฟ้าแรงสูง 115 kV
   หาดใหญ่ 2 และ สถานีไฟฟ้าแรงสูง 115 kV ยะลา 1
   แผนงานปรับปรุงสถานีไฟฟ้าแรงสูงในพื้นที่ภาคใต้ เพื่อป้องกันการเกิดวินาศกรรมและอุทกภัย
   /หน่วยงานเจ้าของโครงการ ฝ่ายแผนงานและโครงการระบบส่ง การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย

2. **วงเงินงบประมาณที่ได้รับจัดสรร**
   แผนงานปรับปรุงสถานีไฟฟ้าแรงสูงในพื้นที่ภาคใต้ เพื่อป้องกันการเกิดวินาศกรรมและอุทกภัย
   งบประมาณ 2,620 ล้านบาท

3. **วันที่กำหนดราคากลาง** 27 พฤศจิกายน 2566 (วันที่ ชสพ. ทำการแทน รวส. อนุมัติ)
   ราคารวมภาษีมูลค่าเพิ่มและค่าใช้จ่ายอื่นๆ เป็นเงิน 829,000,000.00 บาท **ราคา/หน่วย** ตามเอกสารแนบ

4. **แหล่งที่มาของราคากลาง**
   หลักเกณฑ์การกำหนดราคากลางการจัดซื้อและจัดจ้างงานก่อสร้างระบบส่งไฟฟ้าของสายงานระบบส่ง

5. **รายชื่อเจ้าหน้าที่ผู้กำหนดราคากลาง**

5.1 นายฉัตรชัย เชาวนาธิคม	หมฟ-ส. กวอ-ส.
5.2 นายธิติวัฒน์ เบญจวงศ์รัตน์	หสก-ส. กวอ-ส.
5.3 นายภานุวัฒน์ ลิขิตผลผดุง	หอต-ส. กวอ-ส.
5.4 นางสาวจารุวรรณ พิพัฒน์มงคลพร	หวอ-ส. กวอ-ส.
5.5 นายรุหาญ รุจิธัญธาร	กวป-ส.
5.6 นายศุภกฤษ สุจารีรัตนพงษ์	กวธ-ส.
5.7 นางสาวเอกอุฬาร เทวารุทธ	กวส-ส. อรส.

<u>หมายเหตุ</u> ค่าใช้จ่ายอื่นๆ ได้แก่ ค่าใช้จ่ายที่ กฟผ. ต้องจ่ายตามวิธีการพิจารณาเปรียบเทียบราคาที่กำหนดไว้ในเอกสารประกวดราคา เช่น อากรขาเข้า เป็นต้น

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MEDIUM COST FOR BID NO. HSIS-S-02

SUMMARY OF BID PRICE

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS), SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV HAT YAI 2 AND 115 KV YALA 1 SUBSTATIONS

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Schedule	Description	Currency	Supply of Equipment		Local Currency	Local Transportation	Local Transportation, Construction and Installation
			Foreign Supply	Local Supply			
			CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht
			Amount	Amount	Amount	Amount	Amount
1	115 KV PATTANI SUBSTATION (GIS)	THB	228,788,982.57				
				175,549,583.34	188,702,553.68	198,686.21	171,996,207.05
2	115 KV HAT YAI 2 SUBSTATION						
				3,014,163.00		26,461.00	
3	115 KV YALA 1 SUBSTATION						
				2,009,442.00		26,461.00	

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MEDIUM COST FOR BID NO. HSIS-S-02

SUMMARY OF BID PRICE

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS), SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV HAT YAI 2 AND 115 KV YALA 1 SUBSTATIONS

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Schedule	Description	Currency	Supply of Equipment		Local Currency	Local Transportation	Local Transportation, Construction and Installation
			Foreign Supply	Local Supply			
			CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht
			Amount	Amount	Amount	Amount	Amount
BID PRICE		THB	228,788,982.57	Baht 180,573,188.34	Baht 188,702,553.68	Baht 251,608.21	Baht 171,996,207.05
OTHER EXPENSES		THB	4,575,779.65	Baht	Baht	Baht	Baht
VAT		THB	16,335,533.36	Baht 12,640,123.18	Baht 13,209,178.76	Baht 17,612.57	Baht 12,039,734.49
SUMMARY OF BID PRICE		THB	249,700,295.58	Baht 193,213,311.52	Baht 201,911,732.44	Baht 269,220.78	Baht 184,035,941.54
TOTAL MEDIUM COST		THB	829,130,501.86				
TOTAL MEDIUM COST (ROUNDED)		THB	829,000,000.00				

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MEDIUM COST FOR BID NO. HSIS-S-02
SCHEDULE 1 : 115 KV PATTANI SUBSTATION (GIS)
SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)
HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Currency	Local Transportation	Local Transportation, Construction and Installation
		Foreign Supply	Local Supply			
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht
		Amount	Amount	Amount	Amount	Amount
PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT	THB	226,390,962.37	164,306,614.34			171,996,207.05
PART 1C : CIVIL WORK				188,702,553.68		
PART 1D : SUPPLY OF SPARE PARTS	THB	2,398,020.20	11,242,969.00		198,686.21	
TOTAL PRICE	**THB**	**228,788,982.57**	**Baht 175,549,583.34**	**Baht 188,702,553.68**	**Baht 198,686.21**	**Baht 171,996,207.05**

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PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	**Supply of Equipment**		**Local Transportation, Construction and Installation** (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	Amount
Schedule 1AB1 : Power Transformer and Marshalling Control Cubicle			260,000.00	117,000.00
Schedule 1AB2 : Distribution Transformer			2,072,000.00	932,400.00
Schedule 1AB4 : Surge Arrester	THB	1,920,000.00	432,000.00	1,058,400.00
Schedule 1AB7 : SF6 Gas Insulated Switchgear	THB	191,265,180.00		86,069,331.00

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PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	**Supply of Equipment**		**Local Transportation, Construction and Installation** (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	Amount
Schedule 1AB10 : Disconnecting Switch	THB	3,214,080.00	165,434.00	1,520,781.30
Schedule 1AB11 : Power Fuse, Fuse Link and Hook Stick	THB	1,706,112.10		767,750.45
Schedule 1AB12 : AC&DC Distribution Board and Termination Box			2,690,816.00	1,210,867.20
Schedule 1AB13 : Stationary Battery and Battery Charger	THB	1,082,228.53	1,403,600.00	1,118,622.84

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SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	**Supply of Equipment**		**Local Transportation, Construction and Installation** (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	Amount
Schedule 1AB14 : Substation Steel Structure			3,421,833.13	2,694,693.59
Schedule 1AB15 : Insulator				148,824.35
Schedule 1AB16 : Cable Terminations	THB	14,068,450.00	541,002.00	11,504,943.45
Schedule 1AB17 : XLPE Power Cable			18,932,430.00	14,909,288.63

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SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	**Supply of Equipment**		**Local Transportation, Construction and Installation** (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	Amount
Schedule 1AB18 : Low Voltage Cable and Conductor			17,182,792.00	13,531,448.70
Schedule 1AB19 : Switchyard Lighting Fixtures			1,403,184.20	1,105,007.56
Schedule 1AB20 : Aluminum Tube, Connector and Miscellaneous Hardware			183,352.20	144,389.86
Schedule 1AB21 : Bus Fitting	THB	428,804.68		337,683.69

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SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	**Supply of Equipment**		**Local Transportation, Construction and Installation** (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	Amount
Schedule 1AB22 : Grounding Material	THB	452,936.36	765,434.11	959,466.75
Schedule 1AB23 : Substation Miscellaneous	THB	225,562.70	506,366.70	576,394.40
Schedule 1AB24 : Control and Protection System			107,100,979.00	20,595,341.00
Schedule 1AB25 : Fault Recording System			4,162,262.00	555,143.00

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PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	**Supply of Equipment**		**Local Transportation, Construction and Installation** (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	Amount
Schedule 1AB33 : CCTV			1,456,209.00	350,056.00
Schedule 1AB34 : 48 VDC Stationary Battery, Battery Charger and DC Power			1,315,000.00	100,000.00
Schedule 1AB35 : Communication Cable			311,920.00	581,000.00
Schedule 1AB37 : Medium Voltage Switchgear	THB	12,027,608.00		5,412,423.60

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PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	**Supply of Equipment**		**Local Transportation, Construction and Installation** (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	Amount
Schedule 1AB39 : Commissioning				1,280,000.00
Schedule 1AB40 : Installation of Equipment and Steel Structure Supplied by EGAT				4,414,949.68
PART 1AB	**THB**	**226,390,962.37**	**Baht** **164,306,614.34**	**Baht** **171,996,207.05**

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MEDIUM COST FOR BID NO. HSIS-S-02

PART 1C : CIVIL WORK

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	**Local Currency** (excluding VAT) Baht Amount
Schedule 1C1 : Foundation Work	8,883,205.10
Schedule 1C2 : Cable Trench	11,805,768.15
Schedule 1C3 : Building	98,338,955.13
Schedule 1C4 : Earth Work, Road and Crushed Rock Surfacing	24,254,574.44
Schedule 1C5 : Water Supply System	2,129,481.54
Schedule 1C6 : Drainage System	13,704,015.91
Schedule 1C7 : Special Construction Works	3,417,659.20
Schedule 1C8 : Miscellaneous	6,179,098.43
Schedule 1C9 : Fire Protection System	19,989,795.78
PART 1C	**Baht** **188,702,553.68**

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MEDIUM COST FOR BID NO. HSIS-S-02

PART 1D : SUPPLY OF SPARE PARTS

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Transportation
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht
		Amount	Amount	Amount
Schedule 1D7 : Spare Parts for SF6 Gas Insulated Switchgear	THB	1,129,121.00		56,456.05
Schedule 1D11 : Spare Parts for Power Fuse, Fuse Link and Hook Stick	THB	446,094.00		22,304.70
Schedule 1D12 : Spare Parts for AC&DC Distribution Board and Termination Box			45,024.00	2,251.20
Schedule 1D22 : Spare Parts for Grounding Material	THB	476,315.20		23,815.76

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PART 1D : SUPPLY OF SPARE PARTS

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Transportation
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht
		Amount	Amount	Amount
Schedule 1D24 : Spare Parts for Control and Protection System			10,350,389.00	59,969.00
Schedule 1D25 : Spare Parts for Fault Recording System			847,556.00	16,565.00
Schedule 1D37 : Spare Parts for Medium Voltage Switchgear	THB	346,490.00		17,324.50
PART 1D	**THB**	**2,398,020.20**	**Baht 11,242,969.00**	**Baht 198,686.21**

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MEDIUM COST FOR BID NO. HSIS-S-02
SCHEDULE 2 : 115 KV HAT YAI 2 SUBSTATION
SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV HAT YAI 2 SUBSTATION
HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Currency	Local Transportation	Local Transportation, Construction and Installation
		Foreign Supply	Local Supply			
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht
		Amount	Amount	Amount	Amount	Amount
PART 2E : WORK ON SUPPLY EQUIPMENT BASIS			3,014,163.00		26,461.00	
TOTAL PRICE			**Baht 3,014,163.00**	**Baht**	**Baht 26,461.00**	**Baht**

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MEDIUM COST FOR BID NO. HSIS-S-02

PART 2E : WORK ON SUPPLY EQUIPMENT BASIS

SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV HAT YAI 2 SUBSTATION

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Transportation
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht
		Amount	Amount	Amount
Schedule 2E24 : Control and Protection System			3,014,163.00	26,461.00
PART 2E			**Baht 3,014,163.00**	**Baht 26,461.00**

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MEDIUM COST FOR BID NO. HSIS-S-02
SCHEDULE 3 : 115 KV YALA 1 SUBSTATION
SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV YALA 1 SUBSTATION
HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Currency	Local Transportation	Local Transportation, Construction and Installation
		Foreign Supply	Local Supply			
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht	(excluding VAT) Baht
		Amount	Amount	Amount	Amount	Amount
PART 3E : WORK ON SUPPLY EQUIPMENT BASIS			2,009,442.00		26,461.00	
TOTAL PRICE			**Baht 2,009,442.00**	**Baht**	**Baht 26,461.00**	**Baht**

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PART 3E : WORK ON SUPPLY EQUIPMENT BASIS

SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV YALA 1 SUBSTATION

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Transportation
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	(excluding VAT) Baht
		Amount	Amount	Amount
Schedule 3E24 : Control and Protection System			2,009,442.00	26,461.00
PART 3E			**Baht 2,009,442.00**	**Baht 26,461.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB1 : Power Transformer and Marshalling Control Cubicle

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB1-1	Marshalling Control Cubicle as per EGAT's Dwg No. TP-E-10.5, TP-E-10.6 and TP-E-10.8	2					130,000.00	260,000.00	XXXXX	XXXXX
1AB1-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB1-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	117,000.00	117,000.00
Total Price for Schedule 1AB1							**Baht**	**260,000.00**	**Baht**	**117,000.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB2 : Distribution Transformer

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB2-1	300 kVA, 33000-400/230V distribution transformer, oil immersed, outdoor type as per Ratings and Features RF DX3621	2					826,000.00	1,652,000.00	XXXXX	XXXXX
1AB2-2	150 kVA, 400-400/230V distribution transformer, oil immersed, outdoor type as per Ratings and Features RF DX0404	1					420,000.00	420,000.00	XXXXX	XXXXX
1AB2-3	Cost of Local Transportation, Construction and Installation for Item No. 1AB2-1 thru 1AB2-2	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	932,400.00	932,400.00
Total Price for Schedule 1AB2							**Baht**	**2,072,000.00**	**Baht**	**932,400.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB4 : Surge Arrester

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB4-1	108 kV Surge Arrester as per Ratings and Features RF SA7Y11	18		THB	77,000.00	1,386,000.00			XXXXX	XXXXX
1AB4-2	30 kV Surge Arrester as per Ratings and Features RF SA3Y11	6		THB	89,000.00	534,000.00			XXXXX	XXXXX
1AB4-3	Steel Supporting Structure for SA7Y11 for item no.1AB4-1, H = 4.50 m. as per dwg no.ST-LA-7-01 and SD-AB-0-01	18					24,000.00	432,000.00	XXXXX	XXXXX
1AB4-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB4-1 thru 1AB4-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	1,058,400.00	1,058,400.00
Total Price for Schedule 1AB4				**THB**		**1,920,000.00**	**Baht**	**432,000.00**	**Baht**	**1,058,400.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB7-1	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE TO PATTANI GREEN)	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX
1AB7-2	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE TO PEA)	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX
1AB7-3	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE TO 115kV C-BANK)	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX
1AB7-4	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE NO.1 TO YALA 1)	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB7-5	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE TO POWER TRANSFORMER (KT2A))	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX
1AB7-6	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE NO.2 TO YALA 1 (FUTURE))	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX
1AB7-7	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE TO POWER TRANSFORMER (KT1A))	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX
1AB7-8	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE NO.1 TO HAT YAI 2)	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX

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1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB7-9	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (115kV LINE NO.2 TO HAT YAI 2)	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX
1AB7-10	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (Coupling bay)	1		THB	19,126,518.00	19,126,518.00			XXXXX	XXXXX
1AB7-11	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) and DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01 (Metal Enclosed Bus) including VT's and fast-acting earthing switches at main bus	1	lot	THB	Included	Included			XXXXX	XXXXX
1AB7-12	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC), outdoor type (GIB) as per Drawing No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01	1	lot	THB	Included	Included			XXXXX	XXXXX

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1AB7 : SF6 Gas Insulated Switchgear

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HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB7-13	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) (Cable termination interface Plug-in type as per DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01)	1	lot	THB	Included	Included			XXXXX	XXXXX
1AB7-14	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) (Female cable termination (Plug-in type) and Female cable termination (Plug-in type) with end-cover cap for future feeder** as per DWG. No. PTN-S-1-01/03, PTN-S-1-02/03 and PTN-S-2-01/01)	1	lot	THB	Included	Included			XXXXX	XXXXX
1AB7-15	Local control cubicle for IS7540 for item 1AB7-1 thru 1AB7-14*	10	set	THB	Included	Included			XXXXX	XXXXX
1AB7-16	Steel Supporting Structure for IS7540*	1	lot	THB	Included	Included			XXXXX	XXXXX

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1AB7 : SF6 Gas Insulated Switchgear

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HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB7-17	Removable service platform and removable ladder for GIS inspection	1	lot	THB	Included	Included			XXXXX	XXXXX
1AB7-18	Cost of Local Transportation, Construction and Installation for Item No. 1AB7-1 thru 1AB7-17	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	86,069,331.00	86,069,331.00
	Note : The SF6 gas in a quantity equivalent to 115% of the total equipment actual requirement shall be provided as follows: - 100% of SF6 gas quantity shall be shipped in returnable steel bottles which shall be returned back to Contractor. - 15% of SF6 gas quantity shall be shipped in non-returnable steel bottles which shall become the property of									
Total Price for Schedule 1AB7				**THB**		**191,265,180.00**	**Baht**		**Baht**	**86,069,331.00**

* The design of supporting structures and LCCs for Gas Insulated Switchgear shall be verified by Gas Insulated Switchgear manufacturer.

** Item 1AB7-14 (Female cable termination (Plug-in type) shall be confirmed to Specification no. 1001, clause no. 1001-3.10 Cable Terminations)

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB10 : Disconnecting Switch

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB10-1	123 kV 2000 A air switch (high creepage) motor operated as per Ratings and Features RF DS77AH(IEC) (Phase spacing = 2.25 m)	2		THB	582,749.00	1,165,498.00			XXXXX	XXXXX
1AB10-2	38 kV 1250 A 20 kA air switch vertical break manually gang operated as per Ratings and Features RF DS35D1 (phase spacing = 1.00 m., H = 5.25 m. from base plate to top terminal)	4		THB	233,629.00	934,516.00			XXXXX	XXXXX
1AB10-3	38 kV 1250 A 20 kA air switch vertical break motor operated as per Ratings and Features RF DS35C1(IEC) (phase spacing = 1.00 m., H = 6.00 m. from base plate to top terminal)	2		THB	557,033.00	1,114,066.00			XXXXX	XXXXX
1AB10-4	Steel Supporting Structure for DS77AH(IEC) as per EGAT's Dwg. No. ST-DS-4-01 and SD-AB-0-01, H = 5.30 m	2					82,717.00	165,434.00	XXXXX	XXXXX
1AB10-5	Cost of Local Transportation, Construction and Installation for Item No. 1AB10-1 thru 1AB10-4	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	1,520,781.30	1,520,781.30
Total Price for Schedule 1AB10				**THB**		**3,214,080.00**	**Baht**	**165,434.00**	**Baht**	**1,520,781.30**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB11 : Power Fuse, Fuse Link and Hook Stick

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB11-1	33 kV 100 A 12.5 kA 1-pole dropout fuse as per Ratings and Features RF PF3111 (Not including fuse link or refill unit)	6		THB	204,600.00	1,227,600.00			XXXXX	XXXXX
1AB11-2	Fuse link or refill unit 7E for 33 kV power fuse (standard speed)	6		THB	74,349.00	446,094.00			XXXXX	XXXXX
1AB11-3	6.10 m. (20 ft.) hook stick combination operating hook stick and fuse remover, (14 ft universal with male pin and 6 ft pole extention with female pin) for use with the above power fuse	1		THB	32,418.10	32,418.10			XXXXX	XXXXX
1AB11-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB11-1 thru 1AB11-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	767,750.45	767,750.45
Total Price for Schedule 1AB11				**THB**		**1,706,112.10**	**Baht**		**Baht**	**767,750.45**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB12 : AC&DC Distribution Board and Termination Box

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB12-1	400/230 Vac Load Center Unit Substation (LCUS) as per Dwg. No. SE-LCUS-0-01(Designed by Contractor) and as per Ratings and Features RF LVCB	1					850,440.00	850,440.00	XXXXX	XXXXX
1AB12-2	Lighting Relay Panel (LRP) as per Dwg. No. LT-RP-0-03	1					92,148.00	92,148.00	XXXXX	XXXXX
1AB12-3	Safety switch 600 Vac 500 A, 4 wire, solid neutral (S/N), 3 blades, 3 fuses time lag type, outdoor NEMA 4X enclosure or higher, completed with 500 A fuses. The terminal lug shall be suitable for ; Incoming cable size : 2(3-1/C x 240 sq.mm.), Power Cable (Copper) 1(1-1/C x 240 sq.mm.), Power Cable (Copper) for neutral Outgoing cable size : 2(3-1/C x 240 sq.mm.), Power Cable (Copper) 1(1-1/C x 240 sq.mm.), Power Cable (Copper) for neutral	2					122,066.00	244,132.00	XXXXX	XXXXX
1AB12-4	Termination Box type TB1 as per Dwg No. LT-TB-0-01	10					3,236.00	32,360.00	XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB12 : AC&DC Distribution Board and Termination Box

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB12-5	Outdoor Receptacle Box type ORB1 as per Dwg. No. SE-ORB-0-01	1					22,965.00	22,965.00	XXXXX	XXXXX
1AB12-6	Outdoor Receptacle Box type ORB2 as per Dwg. No. SE-ORB-0-01	1					38,046.00	38,046.00	XXXXX	XXXXX
1AB12-7	Common cubicle for maintenance type 1 as per Dwg. No. SE-CCM-0-01	1					74,600.00	74,600.00	XXXXX	XXXXX
1AB12-8	400/230 Vac Distribution Board as per Dwg. No. TP-E-4.4 (Design by contractor) for GIS Building (GIS)	1					195,405.00	195,405.00	XXXXX	XXXXX
1AB12-9	400/230 Vac Distribution Board as per Dwg. No. TP-E-4.4 for GIS Building (Control)	1					195,405.00	195,405.00	XXXXX	XXXXX
1AB12-10	400/230 Vac Distribution Board as per Dwg. No. TP-E-4.4 for Control Building	1					195,405.00	195,405.00	XXXXX	XXXXX
1AB12-11	125 Vdc Power Panel as per Dwg. No. TP-E-4.4	1					156,690.00	156,690.00	XXXXX	XXXXX
1AB12-12	125 Vdc Distribution Board as per Dwg. No. TP-E-4.4 (Design by contractor) for GIS Building (GIS)	1					148,305.00	148,305.00	XXXXX	XXXXX

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1AB12 : AC&DC Distribution Board and Termination Box

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB12-13	125 Vdc Distribution Board as per Dwg. No. TP-E-4.4 for GIS Building (Control)	1					148,305.00	148,305.00	XXXXX	XXXXX
1AB12-14	125 Vdc Distribution Board as per Dwg. No. TP-E-4.4 for Control Building	2					148,305.00	296,610.00	XXXXX	XXXXX
1AB12-15	Cost of Local Transportation, Construction and Installation for Item No. 1AB12-1 thru 1AB12-14	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	1,210,867.20	1,210,867.20
Total Price for Schedule 1AB12							**Baht**	**2,690,816.00**	**Baht**	**1,210,867.20**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB13 : Stationary Battery and Battery Charger

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB13-1	Vented stationary battery, 58 cells (tubular type) for 125 Vdc system complete with electrolyte and battery rack as per Specification attached (Design by Contractor, The capacity of Stationary Battery shall not be less than 1200 Ah)									
1AB13-1a	a) Battery	1	set	THB	997,700.00	997,700.00			XXXXX	XXXXX
1AB13-1b	b) Electrolyte	1	set	THB	28,691.15	28,691.15			XXXXX	XXXXX
1AB13-1c	c) Battery Rack	1	set	THB	55,837.38	55,837.38			XXXXX	XXXXX
1AB13-2	125 Vdc battery charger having sufficient rated DC output current, but not less than 15 % of associated battery 8 hour drainage rate, complete with all accessories as per Specification attached , and shall be suitable for use with substation battery Item No. 1AB13-1	2					701,800.00	1,403,600.00	XXXXX	XXXXX
1AB13-3	Cost of Local Transportation, Construction and Installation for Item No. 1AB13-1 thru 1AB13-2	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	1,118,622.84	1,118,622.84
Total Price for Schedule 1AB13				**THB**		**1,082,228.53**	**Baht**	**1,403,600.00**	**Baht**	**1,118,622.84**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB14 : Substation Steel Structure

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB14-1	115 kV take-off structure (TS701) as per Dwg. No. ST-TS-7-01	5					145,268.86	726,344.30	XXXXX	XXXXX
1AB14-2	115 kV take-off structure (TS702) as per Dwg. No. ST-TS-7-02	6					192,856.94	1,157,141.64	XXXXX	XXXXX
1AB14-3	115 kV beam (BB701) as per Dwg. No. ST-BB-7-01	3					57,606.62	172,819.86	XXXXX	XXXXX
1AB14-4	115 kV beam (BB703) as per Dwg. No. ST-BB-7-03	5					67,124.23	335,621.15	XXXXX	XXXXX
1AB14-5	22/33 kV deadend structure to PEA (DP401) as per Dwg. No. SD-DP-4-01	2					248,459.85	496,919.70	XXXXX	XXXXX
1AB14-6	Disconnecting switch operating platform (OP002) as per Dwg. No. ST-OP-0-02	9					12,523.18	112,708.62	XXXXX	XXXXX
1AB14-7	22 kV bus support structure (BS202) as per Dwg. No. ST-BS-2-02	4					59,109.40	236,437.60	XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB14 : Substation Steel Structure

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB14-8	22 kV bus support structure (BS204) as per Dwg. No. ST-BS-2-04	2					68,126.09	136,252.18	XXXXX	XXXXX
1AB14-9	Junction box support structure (JB001) as per Dwg. No. ST-JB-0-01	2					11,020.40	22,040.80	XXXXX	XXXXX
1AB14-10	Junction box support structure (JB003) as per Dwg. No. ST-JB-0-03	3					8,515.76	25,547.28	XXXXX	XXXXX
1AB14-11	Cost of Local Transportation, Construction and Installation for Item No. 1AB14-1 thru 1AB14-10	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	2,694,693.59	2,694,693.59
Total Price for Schedule 1AB14							**Baht**	**3,421,833.13**	**Baht**	**2,694,693.59**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB15 : Insulator

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	**Supply of Equipment**				**Local Transportation, Construction and Installation** (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB15-1	Suspension insulator ANSI 52-3 as per Specification attached	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXX	XXXXX
1AB15-2	Suspension insulator fog type (17" minimum leakage distance and 18,000 lb minimum combined M&E strength) as per Specification attached	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXX	XXXXX
1AB15-3	115 kV station post insulator ANSI TR. No. 286, high creepage distance of not less than 3,025 mm.	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXX	XXXXX
1AB15-4	33 kV station post insulator ANSI TR. No. 210	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXX	XXXXX
1AB15-5	Cost of Local Transportation, Construction and Installation for Item No. 1AB15-1 thru 1AB15-4	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	148,824.35	148,824.35
Total Price for Schedule 1AB15							**Baht**		**Baht**	**148,824.35**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB16 : Cable Terminations

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB16-1	115 kV plug-in type cable terminations for 1/C no. 800 sq.mm. XLPE power cable as per Ratings and Features RF PTTN7D1X complete with termination accessories	12		THB	352,000.00	4,224,000.00			XXXXX	XXXXX
1AB16-2	115 kV cable terminations for 1/C no. 800 sq.mm. XLPE power cable as per Ratings and Features RF TN7D1H complete with termination accessories	12		THB	302,500.00	3,630,000.00			XXXXX	XXXXX
1AB16-3	33 kV cable terminations for 1/C no. 500 sq.mm. XLPE power cable as per Ratings and Features RF TN3B1H complete with termination accessories	30		THB	13,200.00	396,000.00			XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB16 : Cable Terminations

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB16-4	Steel supporting structure for 115 kV cable terminations (item no. 1AB16-2). The height of steel support structure shall be minimum 2.50 m. The distance from the top part of the stand-on-structure cable termination (at live part) to the bottom of steel support structure base plate shall be 4.50 - 5.00 m., phase spacing shall be 2.25 m., 3-phase set. See Dwg. No. PTN-ST-TA-7-01 for reference. (Designed by Contractor)*	4					135,250.50	541,002.00	XXXXX	XXXXX
1AB16-5	Cable Cleats with necessary miscellaneous hardware for Item No. 1AB17-1 FLAT formation 1-phase set as per Ratings and Features RF TNAC1 (design by contractor)	Lump sum	Lump sum	THB	4,164,600.00	4,164,600.00			XXXXX	XXXXX
1AB16-6	Cable Cleats with necessary miscellaneous hardware for Item No. 1AB17-2 TREFOIL formation 3-phase set as per Ratings and Features RF TNAC1 (design by contractor)	Lump sum	Lump sum	THB	1,384,900.00	1,384,900.00			XXXXX	XXXXX

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1AB16 : Cable Terminations

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB16-7	Cable Cleats with necessary miscellaneous hardware for Item No. 1AB17-2 FLAT formation 1-phase set as per Ratings and Features RF TNAC1 (design by contractor)	Lump sum	Lump sum	THB	268,950.00	268,950.00			XXXXX	XXXXX
1AB16-8	Cost of Local Transportation, Construction and Installation for Item No. 1AB16-1 thru 1AB16-7	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	11,504,943.45	11,504,943.45
	Note : Steel supporting structure (Item No. 1AB16-4) for cable termination for 1/C 800 sq.mm. XLPE power cable shall be designed, considering prevention of any electrical and magnetic issues such as Eddy current.									
Total Price for Schedule 1AB16				**THB**		**14,068,450.00**	**Baht**	**541,002.00**	**Baht**	**11,504,943.45**

* The design of supporting structures of cable termination shall be verified by cable terminations manufacturer.

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB17 : XLPE Power Cable

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB17-1	115 kV 1/C no. 800 sq.mm. XLPE power cable as per Specification attached	Lump sum	Lump sum				8,207,430.00	8,207,430.00	XXXXX	XXXXX
1AB17-2	33 kV 1/C no. 500 sq.mm. XLPE power cable as per Ratings and Features RF PC3B10	Lump sum	Lump sum				10,725,000.00	10,725,000.00	XXXXX	XXXXX
1AB17-3	Cost of Local Transportation, Construction and Installation for Item No. 1AB17-1 thru 1AB17-2	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	14,909,288.63	14,909,288.63
Total Price for Schedule 1AB17							**Baht**	**18,932,430.00**	**Baht**	**14,909,288.63**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB18 : Low Voltage Cable and Conductor

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB18-1	750 V power cable as per Specification attached	Lump sum	Lump sum				6,903,545.00	6,903,545.00	XXXXX	XXXXX
1AB18-2	600 V control cable with PVC insulation as per Specification attached	Lump sum	Lump sum				1,980,055.00	1,980,055.00	XXXXX	XXXXX
1AB18-3	750 V lighting cable (THW) as per Specification attached	Lump sum	Lump sum				97,680.00	97,680.00	XXXXX	XXXXX
1AB18-4	750 V lighting cable (NYY) as per Specification attached	Lump sum	Lump sum				2,071,304.40	2,071,304.40	XXXXX	XXXXX
1AB18-5	Annealed copper ground wire as per Specification attached	Lump sum	Lump sum				5,904,690.00	5,904,690.00	XXXXX	XXXXX
1AB18-6	Aluminum conductor as per Specification attached	Lump sum	Lump sum				194,145.60	194,145.60	XXXXX	XXXXX

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1AB18 : Low Voltage Cable and Conductor

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB18-7	Overhead ground wire as per Specification attached	Lump sum	Lump sum				31,372.00	31,372.00	XXXXX	XXXXX
1AB18-8	Cost of Local Transportation, Construction and Installation for Item No. 1AB18-1 thru 1AB18-7	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	13,531,448.70	13,531,448.70
Total Price for Schedule 1AB18							**Baht**	**17,182,792.00**	**Baht**	**13,531,448.70**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB19 : Switchyard Lighting Fixtures

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB19-1	Flood lighting fixture, LED lamp, 10000 lumen, wide-beam, complete with control gear as per Specification attached	20					13,505.80	270,116.00	XXXXX	XXXXX
1AB19-2	Street lighting fixture, LED lamp, 5000 lumen, wide beam, complete with control gear as per Specification attached	33					13,505.80	445,691.40	XXXXX	XXXXX
1AB19-3	Tapered galvanized steel lamp post H=5000 mm. complete with 5 A 250 V plug fuse, 20 A 500 V terminal block for accepting 4 sq.mm. of incoming and outgoing cables and anchor bolts as per Dwg. No. ST-LP-0-03 and SD-AB-0-01	33					20,829.60	687,376.80	XXXXX	XXXXX
1AB19-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB19-1 thru 1AB19-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	1,105,007.56	1,105,007.56
Total Price for Schedule 1AB19							**Baht**	**1,403,184.20**	**Baht**	**1,105,007.56**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB20 : Aluminum Tube, Connector and Miscellaneous Hardware

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB20-1	Aluminum tube as per Specification attached	Lump sum	Lump sum				48,526.50	48,526.50	XXXXX	XXXXX
1AB20-2	115 kV and below Compression connector as per Specification attached	Lump sum	Lump sum				58,324.20	58,324.20	XXXXX	XXXXX
1AB20-3	115 kV and below Miscellaneous hardware as per Specification attached	Lump sum	Lump sum				76,501.50	76,501.50	XXXXX	XXXXX
1AB20-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB20-1 thru 1AB20-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	144,389.86	144,389.86
Total Price for Schedule 1AB20							**Baht**	**183,352.20**	**Baht**	**144,389.86**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB21 : Bus Fitting

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB21-1	115 kV and below Bus fitting as per Specification attached	Lump sum	Lump sum	THB	428,804.68	428,804.68			XXXXX	XXXXX
1AB21-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB21-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	337,683.69	337,683.69
Total Price for Schedule 1AB21				**THB**	**428,804.68**		**Baht**		**Baht**	**337,683.69**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB22 : Grounding Material

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB22-1	Ground rod as per Specification attached	Lump sum	Lump sum	THB	135,061.80	135,061.80			XXXXX	XXXXX
1AB22-2	Thermite welding material as per Specification attached	Lump sum	Lump sum				765,434.11	765,434.11	XXXXX	XXXXX
1AB22-3	Grounding hardware as per Specification attached	Lump sum	Lump sum	THB	317,874.56	317,874.56			XXXXX	XXXXX
1AB22-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB22-1 thru 1AB22-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	959,466.75	959,466.75
Total Price for Schedule 1AB22				**THB**		**452,936.36**	**Baht**	**765,434.11**	**Baht**	**959,466.75**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB23 : Substation Miscellaneous

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB23-1	Rigid steel conduit as per Specification attached	Lump sum	Lump sum				205,586.70	205,586.70	XXXXX	XXXXX
1AB23-2	Fitting for rigid steel conduit as per Specification attached	Lump sum	Lump sum	THB	149,989.40	149,989.40			XXXXX	XXXXX
1AB23-3	HDPE conduit and fitting as per Specification attached	Lump sum	Lump sum				21,600.00	21,600.00	XXXXX	XXXXX
1AB23-4	Heat shrinkable insulation material	Lump sum	Lump sum	THB	75,573.30	75,573.30			XXXXX	XXXXX
1AB23-5	Identification and danger notice plate as per drawing attached	Lump sum	Lump sum				279,180.00	279,180.00	XXXXX	XXXXX
1AB23-6	Cost of Local Transportation, Construction and Installation for Item No. 1AB23-1 thru 1AB23-5	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	576,394.40	576,394.40
Total Price for Schedule 1AB23				**THB**		**225,562.70**	**Baht**	**506,366.70**	**Baht**	**576,394.40**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	**Supply of Equipment**				**Local Transportation, Construction and Installation** (excluding VAT) Baht	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht			
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB24-1	DSS : Digital Substation System including System Integrator	-See Bill of Materials for 1AB24-1 -See Scope of Work -Specification No. 1008 -Drawing Nos. PTN-E-1 SH.1-3, PTN-S-6, PTN-S-7, and TP-E-20.3	1	SET				107,100,979.00	107,100,979.00	XXXXX	XXXXX
1AB24-2	DSS : EGAT SCADA X Software	-Installed in Computer for HMI Server -See Scope of Work	1	SET		supply by EGAT	supply by EGAT	supply by EGAT	supply by EGAT	XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht			
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB24-3	DSS : EGAT Gateway Software	-Installed in Computer for Engineering Workstation -See Scope of Work	1	SET		supply by EGAT	supply by EGAT	supply by EGAT	supply by EGAT	XXXXX	XXXXX
1AB24-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB24-1 thru 1AB24-3		Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	20,595,341.00	20,595,341.00
Total Price for Schedule 1AB24								**Baht**	**107,100,979.00**	**Baht**	**20,595,341.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB25 : Fault Recording System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht			
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB25-1	DSS : Fault Recording System	-See Bill of Materials for 1AB25-1 -See Scope of Work -Specification Ref. 1003, 1008 -Drawing Nos. PTN-E-1 SH.1-3, and TP-E-20.3	1	SET				4,162,262.00	4,162,262.00	XXXXX	XXXXX
1AB25-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB25-1		Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	555,143.00	555,143.00
Total Price for Schedule 1AB25								**Baht 4,162,262.00**		**Baht 555,143.00**	

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB33 : CCTV

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB33-1	CCTV System and accessories including:	1	SET				1,456,209.00	1,456,209.00	XXXXX	XXXXX
	(1) Outdoor PTZ Dome Camera (3 EA) (2) Indoor Fixed Camera (9 EA) (3) Outdoor Fixed Camera (3 EA) (4) PC Workstation (1 EA) (5) Server (1 EA) (6) Software license (6.1) Software management license (1 License) (6.2) Redording license (15 Licenses) (6.3) Video analytic license (15 Licenses) (7) Ethernet I/O Module (1 EA) (8) Monitor (2 EA) (9) HDMI Optical Extender (1 SET) (10) LAN Switch (1 EA) (11) CCTV Rack Cabinet (1 EA) Size: 60x80x218.5cm. Front door: Steel sheet with Plastic Acrylic (12) CCTV steel box/ End-point steel box (Lumpsum) (13) Monitoring Desk (1 EA) (14) PoE Injector for Fixed camera (12 EA)									

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filename : HSIS-S-02-1 (115 kV Pattani)

MEDIUM COST FOR BID NO. HSIS-S-02

1AB33 : CCTV

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	**Supply of Equipment**				**Local Transportation, Construction and Installation** (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
	(15) Adapter for PTZ camera (3 EA) (16) CCTV Pole 2 meter (Lumpsum) (17) CCTV Pole 4 meter (Lumpsum) (18) Indoor-type twisted pair cable (Lumpsum) (19) Outdoor-type twisted pair cable (Lumpsum) (20) 12-core ADSS Optical Fiber Cable (Lumpsum) (21) Media Converter (UTP-Fiber Optic) (16 EA) (22) Surge protection-220VAC (3 SET) (23) Line Filter (3 EA) (24) Electrical cable (Lumpsum) (25) EMT couduit (Lumpsum) (26) IMC, Flexible conduit with PVC coating (Lumpsum) (27) E-flex/HDPE (Lumpsum) (28) Ground System (Lumpsum) (29) Accessories (Lumpsum)									

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB33 : CCTV

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB33-2	Cost of Local Transportation, Construction and Installation for Item no. 1AB33-1	1	JOB		XXXXX	XXXXX	XXXXX	XXXXX	350,056.00	350,056.00
	IMPORTANT : 1. The Bidders are required to propose their estimated quantities for such item together with their bid proposal for EGAT's consideration. 2. Telecommunication Equipment supplied under Schedule 1AB33 shall conform to Specification No. SD-CCTV-P01, Drawing No. DW-COM-D01-007-ALL and DW-CAB-D01-019									
Total Price for Schedule 1AB33							**Baht**	**1,456,209.00**	**Baht**	**350,056.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB34 : 48 VDC Stationary Battery, Battery Charger and DC Power Panel

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB34-1	Vented Type Lead-Acid Station Battery 48Vdc. with capacity not less than 600 Ah (Tubular plate) at 10 Hour rated, 24 Cells,Nominal Voltage 2Volts/Cell, with Rack 1 set (115 kV GIS BUILDING at PTN)	1	SET				365,000.00	365,000.00	XXXXX	XXXXX
1AB34-2	Conventional Type Charger 48VDC, 150A. (115 kV GIS BUILDING at PTN)	2	SET				400,000.00	800,000.00	XXXXX	XXXXX
1AB34-3	48VDC. Load center Type1: 60 Breaker (115 kV GIS BUILDING at PTN)	1	SET				150,000.00	150,000.00	XXXXX	XXXXX
1AB34-4	Local Transportation, Construction and Installation for item 1AB34-1, 1AB34-2 and 1AB34-3	1	JOB		XXXXX	XXXXX	XXXXX	XXXXX	100,000.00	100,000.00
Total Price for Schedule 1AB34							**Baht**	**1,315,000.00**	**Baht**	**100,000.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB35 : Communication Cable

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB35-1	Optical Fiber Cable from fiber frame termination cabinet at Pattani new control building to joint box at 115 kV Yala 1 take-off structure									
1AB35-1.1	Supply of optical fiber cable and accessories including: (a) 36-core non-metallic optical fiber cable (approx. 250 meters) (b) Rigid steel conduit from take-off structure to cable trench (lump sum) (c) EFLEX and/or HDPE conduit with hot-dip galvanized steel clamp (lump sum) (d) Rack cabinet and accessories (Pattani new control building - 1 set) (e) Fiber frame termination cabinet with cable tray (Pattani new control building - 1 set) (f) 36 Pigtails (1.5 meters) (Pattani new control building - 1 set) (g) 6-wire cleat for coiling optical fiber cable at take-off structure (4 sets) (h) 2-way joint box and accessories for optical fiber cable at take-off structure (1 set)	1	LOT				130,190.00	130,190.00	XXXXX	XXXXX
1AB35-1.2	Local transportation, Construction and Installation for item1AB35-1.1 (Including splicing work and field testing for optical fiber)	1	JOB		XXXXX	XXXXX	XXXXX	XXXXX	209,840.00	209,840.00

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB35 : Communication Cable

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB35-2	Optical Fiber Cable from fiber frame termination cabinet at Pattani new control building to joint box at 115 kV Hat Yai 2 take-off structure									
1AB35-2.1	Supply of optical fiber cable and accessories including: (a) 36-core non-metallic optical fiber cable (approx. 250 meters) (b) Rigid steel conduit from take-off structure to cable trench (lump sum) (c) EFLEX and/or HDPE conduit with hot-dip galvanized steel clamp (lump sum) (d) Fiber frame termination cabinet with cable tray (Pattani new control building - 1 set) (e) 36 Pigtails (1.5 meters) (Pattani new control building - 1 set) (f) 6-wire cleat for coiling optical fiber cable at take-off structure (4 sets) (g) 2-way joint box and accessories for optical fiber cable at take-off structure (1 set)	1	LOT				103,810.00	103,810.00	XXXXX	XXXXX
1AB35-2.2	Local transportation, Construction and Installation for item1AB35-2.1 (Including splicing work and field testing for optical fiber)	1	JOB		XXXXX	XXXXX	XXXXX	XXXXX	203,170.00	203,170.00

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1AB35 : Communication Cable

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB35-3	Temporary Optical Fiber Cable from fiber frame termination cabinet at Pattani new control building to fiber frame termination cabinet at Pattani existing control building									
1AB35-3.1	Supply of optical fiber cable and accessories including: (a) 36-core non-metallic optical fiber cable (approx. 200 meters) (b) EFLEX and/or HDPE conduit with hot-dip galvanized steel clamp (lump sum) (c) Fiber frame termination cabinet with cable tray (Pattani new control building - 1set, Pattani existing control building - 1set) (d) 36 pigtails (1.5 meter) (Pattani new control building - 1 set, Pattani existing control building - 1 set)	1	LOT				77,920.00	77,920.00	XXXXX	XXXXX
1AB35-3.2	Local transportation, Construction and Installation for item 1AB35-3.1 (Including splicing work and field testing for optical fiber)	1	JOB		XXXXX	XXXXX	XXXXX	XXXXX	167,990.00	167,990.00
	IMPORTANT: 1. Telecommunication Equipment supplied under Schedule AB35 shall conform to Telecommunication Equipment Specification: Single Sheath Non-metallic Optical Fiber Cable (SD-FOT-P22). 2. The Bidder is required to later break down the unit price for sub-items of this Schedule for consideration.									
Total Price for Schedule 1AB35							**Baht**	**311,920.00**	**Baht**	**581,000.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB37 : Medium Voltage Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB37-1	36 kV 1250 A 25 kA metal-clad Gas Insulated Switchgear as per Ratings and Features RF MS3527(IEC) , modular design, single row arrangment, indoor, free standing, complete with end covers, cable termination (socket and plug), dummy plugs for future feeder*, control protection and accessories (see Dwg. No. PTN-S-1-03/03 and PTN-S-2-01/01) (Switchgear No.1)	1		THB	5,760,799.00	5,760,799.00			XXXXX	XXXXX
1AB37-2	36 kV 1250 A 25 kA metal-clad Gas Insulated Switchgear as per Ratings and Features RF MS3527(IEC) , modular design, single row arrangment, indoor, free standing, complete with end covers, cable termination (socket and plug), dummy plugs for future feeder*, control protection and accessories (see Dwg. No. PTN-S-1-03/03 and PTN-S-2-01/01) (Switchgear No.2)	1		THB	5,760,799.00	5,760,799.00			XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB37 : Medium Voltage Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB37-3	Accessories and special tools necessary for medium voltage switchgear (if any)	1	lot	THB	506,010.00	506,010.00			XXXXX	XXXXX
1AB37-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB37-1 thru 1AB37-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	5,412,423.60	5,412,423.60
Total Price for Schedule 1AB37				**THB**		**12,027,608.00**	**Baht**		**Baht**	**5,412,423.60**

* shall be able to withstand rated insulation level of the metal-clad Gas Insulated Switchgear

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB39 : Commissioning

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	**Supply of Equipment**				**Local Transportation, Construction and Installation** (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB39-1	Commissioning	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	1,280,000.00	1,280,000.00
Total Price for Schedule 1AB39							**Baht**		**Baht**	**1,280,000.00**

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MEDIUM COST FOR BID NO. HSIS-S-02

1AB40 : Installation of Equipment and Steel Structure Supplied by EGAT

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	**Supply of Equipment**				**Local Transportation, Construction and Installation** (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB40-1	Dismantlement	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	4,414,949.68	4,414,949.68
Total Price for Schedule 1AB40							**Baht**		**Baht**	**4,414,949.68**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-1	Transformer Foundation (T-125) Long Pile Type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-TX-7-02	2	Set	304,656.00	609,312.00
1C1-2	115 kV Take off Structure Foundation (TS701) Pile , Bored pile Type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-TS-7-04	5	Set	115,349.30	576,746.50
1C1-3	115 kV Take off Structure Foundation (TS702) Pile Type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-TS-7-07	6	Set	121,327.80	727,966.80
1C1-4	115 kV. GIS bushing structure foundation(GBS701) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor PSP-SH1-FD-GIS-7-01 See Scope of work	5	Set	39,108.30	195,541.50
1C1-5	115 kV. GIB support structure foundation (GIB7-1)(Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor PSP-SH1-FD-GIB-7-01 See Scope of work	Lump sum	Lump sum	158,230.60	158,230.60

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-6	115/230 kV General equipment support structure foundation (BP701,BP801,CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Long & Bored Pile Type (LA701)(Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-GE-0-03	18	Set	16,704.60	300,682.80
1C1-7	115 kV Cable termination support foundation (TM701) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor FD-TM-7-02	8	Set	58,826.90	470,615.20
1C1-8	115 kV Disconnecting Switch Support foundation (DS704) Pile Type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-DS-7-08	2	Set	78,404.70	156,809.40
1C1-9	Dead end structure foundation (DP401) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor TM/FD-DP-4-02	4	Set	121,107.80	484,431.20

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-10	22 kV Bus support structure foundation (BS201,BS202,BS203,BS204) Pile,Bored Pile Type (BS202)(Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-BS-2-03	8	Set	40,470.10	323,760.80
1C1-11	22 kV Bus support structure foundation (BS201,BS202,BS203,BS204) Pile,Bored Pile Type(BS204)(Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-BS-2-03	4	Set	41,068.50	164,274.00
1C1-12	22 kV Bus pole support structure foundation (BP 201, BP202, BP203) Pile Type(BP201) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-BP-2-02	2	Set	16,283.30	32,566.60
1C1-13	Disconnecting Switch Operating Platform foundation (OP002)	FD-OP-0-02	9	Set	3,181.20	28,630.80
1C1-14	Junction Box Structure foundation (JB001) Pad Type	FD-JB-0-01	2	Set	6,851.90	13,703.80

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-15	Junction Box Structure foundation (JB003) Pad Type	FD-JB-0-05	3	Set	8,574.50	25,723.50
1C1-16	Outdoor marshalling Cubicle foundation and Sub-Trench (MC002) Pad Type	FD-MC-0-06	2	Set	12,331.00	24,662.00
1C1-17	115 kV Circuit breaker foundation (CB703) Pile Type(CBT701) Pile Type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor FD-CB-7-39	1	Set	67,142.90	67,142.90
1C1-18	115 kV Disconnecting Switch Support foundation (DS704) Pile Type (DS(Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor FD-DS-7-08	1	Set	78,404.70	78,404.70

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-19	115/230 kV General equipment support structure foundation (BP701,BP801,CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Long & Bored Pile Type (CT702)(Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor FD-GE-0-03	3	Set	17,153.40	51,460.20
1C1-20	RC. Slab for Skid Base 115 kV ,36 MVAR (SK704)	FD-SK-7-11	2	Set	109,850.40	219,700.80
1C1-21	RC. Slab for Skid Base 115 kV ,36 MVAR (SK705)	FD-SK-7-11	1	Set	109,850.40	109,850.40
1C1-22	33 kV 3150 Kvar Shunt Capacitor-Bank foundation (SC301) Pile Type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-SC-3-02	2	Set	60,790.40	121,580.80

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-23	RC. Slab for Skid Base (SK203) (SK202)	FD-SK-2-07	4	Set	38,392.20	153,568.80
1C1-24	Prestressed concrete pole 22.00 m (CP.22)	CP-SB-4-01	9	Set	46,345.20	417,106.80
1C1-25	Isolating Transformer Foundation (IST) Pad Type	FD-TX-0-02	1	Set	33,254.10	33,254.10
1C1-26	Lighting Relay Panel foundation (RP002) Pad Type	FD-RP-0-03	1	Set	8,105.90	8,105.90

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-27	Lamp post for fence and access road lighting foudation (LP3) (LED type) Pad Type & Pile Type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-LP-0-05	25	Set	19,890.20	497,255.00
1C1-28	Fire Wall 8.00m Height (FW) Pile Type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	FD-FW-0-02	1	Set	799,389.80	799,389.80
1C1-29	115 kV Take off Structure Foundation (TS701) Pile Type(Existing to be removed)	FD-TS-7-05	1	Set	25,378.10	25,378.10
1C1-30	115 kV Take off Structure Foundation (TS701) Pile Type(Existing to be removed)	FD-TS-7-08	4	Set	33,696.30	134,785.20

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-31	115 kV Take off Structure Foundation (TS701) Pile Type(Existing to be removed)	FD-TS-7-02	9	Set	44,858.00	403,722.00
1C1-32	115 kV Bus pole support structure foundation (BP 701) Pile Type(Existing to be removed)	FD-BP-7-02	102	Set	3,043.70	310,457.40
1C1-33	115 kV Bus support structure foundation (BS701,BS703) Pile Type(BS701)(Existing to be removed)	FD-BS-7-02	2	Set	7,902.40	15,804.80
1C1-34	115 kV Disconnecting Switch Support foundation (DS704) Pile Type (Existing to be removed)	FD-DS-7-08	7	Set	15,741.00	110,187.00
1C1-35	115 kV Ground Switch Support foundation (GS701) Pile Type(Existing to be removed)	FD-GS-7-02	2	Set	8,625.10	17,250.20

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-36	115 kV Disconnecting Switch Support foundation (DS701) Pile Type (Existing to be removed)	FD-DS-7-02	13	Set	10,055.10	130,716.30
1C1-37	Disconnecting switch operating platform foundation (OP001) (Existing to be removed)	FD-OP-0-01	30	Set	1,337.60	40,128.00
1C1-38	22&33 kV Metering Structure foundation (MS401),(MS405) Pile Type(MS401)(Existing to be removed)	FD-MS-4-02	2	Set	23,179.20	46,358.40
1C1-39	Transformer Foundation (T-125) Long Pile Type(Existing to be removed)	FD-TX-7-02	3	Set	49,315.20	147,945.60
1C1-40	115 kV Circuit breaker foundation (CB701) Pile Type(Existing to be removed)	FD-CB-7-02	2	Set	11,235.40	22,470.80

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-41	115 kV Current Transformer foundation (CT701) Pile Type (Existing to be removed)	FD-CT-7-02	6	Set	4,759.70	28,558.20
1C1-42	115 kV CCVT.Support Structure Foundation (VT701) Pile Type(Existing to be removed)	FD-VT-7-02	1	Set	2,820.40	2,820.40
1C1-43	92 & 115 kV CC. Support Structure foundation (CC701) Pile Type (Existing to be removed)	FD-CC-7-02	1	Set	3,197.70	3,197.70
1C1-44	33 kV Bus pole support structure foundation (BP 201, BP202, BP203) Pile Type(BP202)(Existing to be removed)	FD-BP-2-02	2	Set	2,548.70	5,097.40
1C1-45	33 kV 3150 Kvar Shunt Capacitor-Bank foundation (SC301) Pile Type(Existing to be removed)	FD-SC-3-02	1	Set	8,695.50	8,695.50

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-46	22&33 kV Metering Structure foundation (MS403,MS406,MS407) Pile Type(MS406) (Existing to be removed)	FD-MS-4-06	1	Set	14,217.50	14,217.50
1C1-47	115 kV Disconnecting Switch Support foundation (DS701) Pile Type (Existing to be removed)	PTN-C-5	2	Set	10,055.10	20,110.20
1C1-48	RC. Support for Skid Base (SK202) (Existing to be removed)	FD-SK-2-02	4	Set	8,047.60	32,190.40
1C1-49	115 kV Circuit breaker foundation (GCB701) Pile Type(Existing to be removed)	TP-370-3	2	Set	11,235.40	22,470.80
1C1-50	115 kV Circuit breaker foundation (GCB701) Pile Type(Existing to be removed)	Unidentified	1	Set	11,235.40	11,235.40

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-51	115 KV.Current transformer support structure foundation(GCT701)(Existing to be removed)	Unidentified	3	Set	4,759.70	14,279.10
1C1-52	115 KV.Current transformer support structure foundation(GCT701)(Existing to be removed)	PTN-C-5.1	3	Set	4,759.70	14,279.10
1C1-53	115 KV.VT.Support structure foundation(GVT701)(Existing to be removed)	Unidentified	3	Set	2,820.40	8,461.20
1C1-54	Junction Box Structure foundation (JB001) Pad Type(Existing to be removed)	FD-JB-0-01	1	Set	2,741.20	2,741.20
1C1-55	115 kV Current Transformer foundation (CT702) Pile Type(Existing to be removed)	FD-CT-7-04	9	Set	14,122.90	127,106.10

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-56	115 kV Circuit breaker foundation (GCB301)(Existing to be removed)	TM/FD-CB-2-02	1	Set	3,688.30	3,688.30
1C1-57	115 kV Circuit breaker foundation (GCB701) Pile Type(Existing to be removed)	TM/FD-CB-7-02	1	Set	11,235.40	11,235.40
1C1-58	115 kV Coupling Voltage Transformer Foundation (VT703) Pile Type(Existing to be removed)	FD-VT-7-06	5	Set	3,224.10	16,120.50
1C1-59	115 kV Coupling Capacitor foundation (CC704) Pile Type(Existing to be removed)	FD-CC-7-08	2	Set	10,832.80	21,665.60
1C1-60	115 KV.Power circuit breaker foundation(ECB2-2)(Existing to be removed)	TP-377	1	Set	3,822.50	3,822.50

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					Unit Price	Amount
1C1-61	Concrete pole strain bus structure (CP16)(CP16.1)(Existing to be removed)	CP-SB-4-01	2	Set	4,814.70	9,629.40
1C1-62	69 kV and 115 kV Skid Base foundation (SK706)(Existing to be removed)	FD-SK-4-02	1	Set	43,401.60	43,401.60
1C1-63	69 kV and 115 kV Skid Base foundation (SK707)(Existing to be removed)	FD-SK-4-02	1	Set	43,401.60	43,401.60
1C1-64	Modified 22 kV Circuit breaker foundation (CB208M)(Existing to be removed)	PTN-CB-2-01	1	Set	3,430.90	3,430.90
1C1-65	Junction Box Structure foundation (JB003) Pad Type(Existing to be removed)	FD-JB-0-05	1	Set	3,430.90	3,430.90

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-66	Outdoor marshalling Cubicle foundation and Sub-Trench (MC002) Pad Type (Existing to be removed)	FD-MC-0-06	1	Set	4,933.50	4,933.50
1C1-67	115 kV Take off Structure Foundation (TS701) Pile , Bored pile Type(Existing to be removed)	FD-TS-7-04	1	Set	21,958.20	21,958.20
1C1-68	115 kV Disconnecting Switch Support foundation (DS704) Pile Type (Existing to be removed)	FD-DS-7-08	4	Set	15,741.00	62,964.00
1C1-69	115/230 kV General equipment support structure foundation (BP701,BP801, CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Short Pile Type(CT702)(Existing to be removed)	FD-GE-0-03	6	Set	3,451.80	20,710.80

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					Unit Price	Amount
1C1-70	115/230 kV General equipment support structure foundation (BP701,BP801, CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Short Pile Type(VT703)(Existing to be removed)	FD-GE-0-03	3	Set	3,451.80	10,355.40
1C1-71	115/230 kV General equipment support structure foundation (BP701,BP801, CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Short Pile Type(BP701)(Existing to be removed)	FD-GE-0-03	6	Set	3,451.80	20,710.80
1C1-72	Disconnecting Switch Operating Platform foundation (OP002) (Existing to be removed)	FD-OP-0-02	4	Set	1,272.70	5,090.80

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MEDIUM COST FOR BID NO. HSIS-S-02

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-73	115 kV Circuit breaker foundation (CB713) Pile , Bored pile Type(Existing to be removed)	FD-CB-7-30	1	Set	5,513.20	5,513.20
Total Price for Schedule 1C1					**Baht**	**8,883,205.10**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C2 : Cable Trench

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C2-1	Cable trench type "A" including steel cover for XLPE system	Designed by Contractor See Dwg.PTN-C-3	Lump sum	Lump sum	4,316,215.20	4,316,215.20
1C2-2	Cable trench type "B" including steel cover for XLPE system	Designed by Contractor See Dwg.PTN-C-3	Lump sum	Lump sum	612,766.00	612,766.00
1C2-3	Cable trench type "A" including RC cover for XLPE system	Designed by Contractor See Dwg.PTN-C-3	Lump sum	Lump sum	1,756,654.90	1,756,654.90
1C2-4	Cable trench type "B" including RC cover for XLPE system	Designed by Contractor See Dwg.PTN-C-3	Lump sum	Lump sum	629,659.80	629,659.80
1C2-5	Standard cable trench, steel cover included (Type"A")	SD-CE-0-02 See Dwg.PTN-C-3	Lump sum	Lump sum	3,454,578.60	3,454,578.60

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MEDIUM COST FOR BID NO. HSIS-S-02

1C2 : Cable Trench

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C2-6	Standard cable trench, steel cover included (Type"B")	SD-CE-0-02 See Dwg.PTN-C-3	Lump sum	Lump sum	995,031.40	995,031.40
1C2-7	Standard cable trench, steel cover included (Type"A") (Existing to be removed)	SD-CE-0-02 See Dwg.PTN-C-3	Lump sum	Lump sum	37,727.25	37,727.25
1C2-8	Standard cable trench, steel cover included (Type"B") (Existing to be removed)	SD-CE-0-02 See Dwg.PTN-C-3	Lump sum	Lump sum	3,135.00	3,135.00
Total Price for Schedule 1C2					**Baht**	**11,805,768.15**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C3-1	115 kV Control Building (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor SD-CD-0-02A See Dwg.No.PTN-C-1 See Scope of work	Lump sum	Lump sum	45,195,398.86	45,195,398.86
1C3-1.1	Air conditioning system and Ventilation system					
1C3-1.1.1	Minimum 24,000 BTU split-type air conditioner, including installation fee (Not Higher than the price specified by the Bureau of the Budget www.bb.go.th)		1	set	38,733.29	38,733.29
1C3-1.1.2	Minimum 36,000 BTU split-type air conditioner, including installation fee (Not Higher than the price specified by the Bureau of the Budget www.bb.go.th)		1	set	54,731.82	54,731.82

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MEDIUM COST FOR BID NO. HSIS-S-02

1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C3-1.1.3	Minimum 40,000 BTU split-type air conditioner (Invertor), including installation fee (Not Higher than the price specified by the Bureau of the Budget www.bb.go.th)		4	set	70,369.49	281,477.96
1C3-1.1.4	Minimum 48,000 BTU split-type air conditioner (Invertor), including installation fee (Not Higher than the price specified by the Bureau of the Budget www.bb.go.th)		8	set	73,256.44	586,051.52
1C3-1.1.5	Minimum 60,000 BTU split-type air conditioner (Invertor), including installation fee (Not Higher than the price specified by the Bureau of the Budget www.bb.go.th)		2	set	76,969.87	153,939.74
1C3-1.1.6	Extra work for air conditioning system		Lump sum	Lump sum		

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1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C3-1.1.7	Ventilation system		Lump sum	Lump sum		
1C3-1.2	Solar rooftop system		Lump sum	Lump sum	3,567,841.20	3,567,841.20
1C3-2	115 kV GIS Building (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor SD-GIS-7-02A See Dwg.No.PTN-C-1 See Scope of work	Lump sum	Lump sum	41,956,064.19	41,956,064.19
1C3-2.1	Air conditioning system and Ventilation system		Lump sum	Lump sum		
1C3-2.1.1	Ventilation system		Lump sum	Lump sum		

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1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C3-3	22/33kV Switchgear Building (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor SD-SWG-3-01A 01/13-13/13 SD-SWG-3-01C 01/11-11/11 SD-SWG-3-01FP 01/01 SD-SWG-3-01L 01/02-02/02 SD-SWG-3-01M 01/01 SD-SWG-3-01ME 01/01 SD-SWG-3-01SN 01/02-02/02 See Dwg.No.PTN-C-1 See Scope of work	Lump sum	Lump sum	6,211,690.79	6,211,690.79
1C3-1.1	Air conditioning system and Ventilation system					
1C3-1.1.1	Minimum 48,000 BTU split-type air conditioner (Invertor), including installation fee (Not Higher than the price specified by the Bureau of the Budget www.bb.go.th)		4	set	73,256.44	293,025.76

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1C3 : Building

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HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	**Local Currency** (excluding VAT) Baht	
					Unit Price	Amount
1C3-1.1.2	Extra work for air conditioning system		Lump sum	Lump sum		
1C3-1.1.3	Ventilation system		Lump sum	Lump sum		
Total Price for Schedule 1C3					**Baht**	**98,338,955.13**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C4 : Earth Work, Road and Crushed Rock Surfacing

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C4-1	Embankment for site preparation	See Dwg.PTN-C-2	Lump Sum	Lump Sum	10,197,000.00	10,197,000.00
1C4-2	Stripping ≥0.30 m	See Dwg.PTN-C-2	Lump Sum	Lump Sum	2,831,818.00	2,831,818.00
1C4-3	Sodding	See Dwg.PTN-C-2	Lump Sum	Lump Sum	41,354.50	41,354.50
1C4-4	Retaining wall with wire mesh fence	Designed by Contractor SD-RW-0-01 01/01 See Dwg.PTN-C-2	Lump Sum	Lump Sum	1,848,870.02	1,848,870.02
1C4-5	RC covering steel post & bracing of existing telecomunication	See Dwg.PTN-C-2	Lump Sum	Lump Sum	18,406.30	18,406.30

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MEDIUM COST FOR BID NO. HSIS-S-02
1C4 : Earth Work, Road and Crushed Rock Surfacing
SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)
HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C4-6	RC covering opening between ground floor and control room floor of existing control building	Designed by Contractor See Dwg.PTN-C-2	Lump Sum	Lump Sum	3,022,279.92	3,022,279.92
1C4-7	RC.Road type " E " section 4 - 4	SD-RD-0-01 See Dwg.PTN-C-6	Lump Sum	Lump Sum	2,688,400.00	2,688,400.00
1C4-8	Crushed rock surfacing 0.10 m thickness	See Dwg.PTN-C-1	Lump Sum	Lump Sum	1,186,168.50	1,186,168.50
1C4-9	Crushed rock surfacing 0.10 m thickness (relocated from existing)	See Dwg.PTN-C-1	Lump Sum	Lump Sum	1,496,761.20	1,496,761.20
1C4-10	Transformer loading	SD-RD-0-03 See Dwg.PTN-C-6	Lump Sum	Lump Sum	85,536.00	85,536.00

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MEDIUM COST FOR BID NO. HSIS-S-02

1C4 : Earth Work, Road and Crushed Rock Surfacing

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C4-11	RC.Road type " E " section 4 - 4 (Existing to be removed)	SD-RD-0-01 See Dwg.PTN-C-6	Lump Sum	Lump Sum	837,980.00	837,980.00
Total Price for Schedule 1C4					**Baht**	**24,254,574.44**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C5 : Water Supply System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C5-1	Water supply system	Designed by Contractor See Scope of work See Dwg.PTN-C-9	Lump Sum	Lump Sum	160,659.40	160,659.40
1C5-2	Deep well system	Designed by Contractor	Lump Sum	Lump Sum	121,376.00	121,376.00
1C5-3	Water treatment system	Designed by Contractor	Lump Sum	Lump Sum	206,496.40	206,496.40
1C5-4	Water treatment system house(Pile type)(Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor	Lump Sum	Lump Sum	113,264.80	113,264.80
1C5-5	50 cu.m Underground water tank (Pile type) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	WD-UT-0-01	1	set	608,070.65	608,070.65
1C5-6	15 cu.m Water tank tower Pile type (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	WD-WT-0-02	1	set	504,682.41	504,682.41

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1C5 : Water Supply System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	**Local Currency** (excluding VAT) Baht	
					Unit Price	Amount
1C5-7	Water supply pump (Centrifugal pump)	Designed by Contractor	2	set	167,556.84	335,113.68
1C5-8	Pump House	WD-WT-0-01	2	set	14,158.10	28,316.20
1C5-9	Pipe sleeve GSP dia.3” Class “B”		Lump Sum	Lump Sum	51,502.00	51,502.00
Total Price for Schedule 1C5					**Baht**	**2,129,481.54**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C6 : Drainage System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C6-1	Drainage System	Designed by Contractor See Scope of work See Dwg.PTN-C-6	Lump sum	Lump sum	10,076,190.30	10,076,190.30
1C6-2	Oil pit with steel grating	WD-DN-0-04	48	m	24,069.10	1,155,316.80
1C6-3	Oil separator (Pile type) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	SD-OS-0-02	1	set	1,454,641.02	1,454,641.02
1C6-4	Drainage System(Existing to be removed)	Designed by Contractor See Scope of work See Dwg.PTN-C-6	Lump sum	Lump sum	1,017,867.79	1,017,867.79
Total Price for Schedule 1C6					**Baht**	**13,704,015.91**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C7 : Special Construction Works

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C7-1	64 sq.m Site office	See Scope of work	1	set	850,000.00	850,000.00
1C7-2	Test and commissioning for fire protection system in switchyard	-	Lump sum	Lump sum	60,000.00	60,000.00
1C7-3	Test and commissioning for inert gas system (Test in Electrical room)	-	Lump sum	Lump sum	70,000.00	70,000.00
1C7-4	Test and commissioning for fire pump system	-	Lump sum	Lump sum	70,000.00	70,000.00
1C7-5	Architectural and Civil engineering design work		Lump sum	Lump sum	1,541,013.01	1,541,013.01
1C7-6	Fire Protection design work		Lump sum	Lump sum	311,446.19	311,446.19

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1C7 : Special Construction Works

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	**Local Currency** (excluding VAT) Baht	
					Unit Price	Amount
1C7-7	Dynamic Pile load test	See Scope of work	Lump sum	Lump sum	150,000.00	150,000.00
1C7-8	Static pile load test	See Scope of work	2	set	179,350.00	358,700.00
1C7-9	Plate bearing test	See Scope of work	1	set	6,500.00	6,500.00
Total Price for Schedule 1C7					**Baht**	**3,417,659.20**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C8 : Miscellaneous

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C8-1	Existing Wire mesh fence to be removed and relocated	SD-CF-0-03 See Dwg. PTN-C-3	Lump sum	Lump sum	124,291.20	124,291.20
1C8-2	Wire mesh fence and gate (Pad type)	SD-CF-0-03 See Dwg. PTN-C-3	Lump sum	Lump sum	7,768.20	7,768.20
1C8-3	Guard house (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	HS-GH-0-02 See Dwg. PTN-C-1	1	set	467,924.96	467,924.96
1C8-4	Garage (5.50x12.00m)	HS-PS-0-02 See Dwg. PTN-C-1	1	set	340,679.90	340,679.90
1C8-5	Flag Pole (15.00m) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	SD-FP-0-02	1	set	268,296.00	268,296.00
1C8-6	Main entrance gate 8.00m width (sliding) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	SD-SG-0-03 See Dwg. PTN-C-1	1	set	499,497.77	499,497.77

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1C8 : Miscellaneous

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Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C8-7	Sign Board Structure & foundation (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	SD-SB-0-08 See Dwg. PTN-C-1	1	set	206,708.26	206,708.26
1C8-8	Standard symbol and sign letters of substation	TP.655A-MS-A-1/1 See Dwg. PTN-C-1	1	set	495,533.50	495,533.50
1C8-9	Wire mesh fence and gate (Pile type)(relocated from existing)	SD-CF-0-01 See Dwg. PTN-C-1	Lump sum	Lump sum	383,394.00	383,394.00
1C8-10	Switchyard entrance gate (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	SD-SG-0-01 See Dwg. PTN-C-1	1	set	336,637.43	336,637.43
1C8-11	Switch yard entrance gate (Sliding gate) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	SD-SG-0-02 See Dwg. PTN-C-1	2	set	336,637.43	673,274.86
1C8-12	Concrete fence (Pile type) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	Designed by Contractor SD-RF-0-02 See Dwg. PTN-C-1	Lump sum	Lump sum	680,766.00	680,766.00

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1C8 : Miscellaneous

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	**Local Currency** (excluding VAT) Baht	
					Unit Price	Amount
1C8-13	Concrete fence (Pile type) (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	SD-RF-0-02 See Dwg. PTN-C-1	Lump sum	Lump sum	536,864.24	536,864.24

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1C8 : Miscellaneous

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C8-14	Main entrance and sign board (Existing to be removed)	SD-SB-0-01 See Dwg. PTN-C-1	1	set	199,799.11	199,799.11
1C8-15	Guard house (Existing to be removed)	HS-GH-0-01 See Dwg. PTN-C-1	1	set	375,812.00	375,812.00
1C8-16	Flag pole (12.00m) (Existing to be removed)	SD-FP-0-01 See Dwg. PTN-C-1	1	set	215,481.00	215,481.00
1C8-17	Wire mesh fence (existing to be removed)	SD-CF-0-01 See Dwg. PTN-C-1	Lump sum	Lump sum	66,560.00	66,560.00
1C8-18	Concrete fence (Pile type)	SD-RF-0-01 See Dwg. PTN-C-1	Lump sum	Lump sum	10,674.00	10,674.00
1C8-19	Water wall (Existing to be removed)	-	Lump sum	Lump sum	249,200.00	249,200.00

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1C8 : Miscellaneous

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	**Local Currency** (excluding VAT) Baht	
					Unit Price	Amount
1C8-20	Wire mesh fence & Gate (Existing to be removed)	SD-CF-0-03 See Dwg. PTN-C-3	Lump sum	Lump sum	39,936.00	39,936.00
Total Price for Schedule 1C8					**Baht**	**6,179,098.43**

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MEDIUM COST FOR BID NO. HSIS-S-02

1C9 : Fire Protection System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C9-1	Fire Protection System for 115kV GIS Building	Designed by Contractor	Lump Sum	Lump Sum	2,538,000.00	2,538,000.00
1C9-2	Fire Protection System for 115kV Control Building	Designed by Contractor	Lump Sum	Lump Sum	3,802,900.00	3,802,900.00
1C9-3	Fire Protection System for switchyard	Designed by Contractor	Lump Sum	Lump Sum	1,651,600.00	1,651,600.00
1C9-4	Water storage tank min. capacity 250 cu.m	WD-UT-0-05	1	set	3,737,738.40	3,737,738.40
1C9-5	Fire pump house	SD-FPH-8-01	1	set	1,698,972.00	1,698,972.00
1C9-6	Fire pump system	Designed by Contractor	Lump Sum	Lump Sum	4,000,000.00	4,000,000.00

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MEDIUM COST FOR BID NO. HSIS-S-02

1C9 : Fire Protection System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C9-7	Fire Protection System for switchyard	Designed by Contractor	Lump Sum	Lump Sum	1,391,185.00	1,391,185.00
1C9-8	Fire Protection environmental monitoring system	Designed by Contractor	Lump Sum	Lump Sum	772,960.00	772,960.00
1C9-9	PC. or RC. Pile sq. 0.26 * 0.26 m. (Pile, Dowel bar , Pile cut off are included and Pile shoe if require)	SD-PL-0-01	Lump Sum	Lump Sum	396,440.38	396,440.38
Total Price for Schedule 1C9					**Baht**	**19,989,795.78**

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MEDIUM COST FOR BID NO. HSIS-S-02

1D7 : Spare Parts for SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D7-1	Gas density meter with two-stage contacts for circuit breaker compartment spare parts for GIS	1	set	THB	30,432.00	30,432.00			XXXXX	XXXXX
1D7-2	Gas density meter for other compartment spare parts for GIS	1	set	THB	59,819.00	59,819.00			XXXXX	XXXXX
1D7-3	Rupture disc of overpressure protection device spare parts for GIS (1 EA for each type/each operating pressure)	1	set	THB	23,535.00	23,535.00			XXXXX	XXXXX
1D7-4	Pump with motor for hydraulic spare parts for GIS (if any)	1	set	THB	51,773.00	51,773.00			XXXXX	XXXXX
1D7-5	Maintenance closing device for circuit breaker	1	set	THB	42,430.00	42,430.00			XXXXX	XXXXX
1D7-6	SF6 gas filling cart accessories for GIS	1	set	THB	191,891.00	191,891.00			XXXXX	XXXXX
1D7-7	Operating Analyzer Fitting Means accessories for GIS	1	set	THB	211,474.00	211,474.00			XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

1D7 : Spare Parts for SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D7-8	Hand pump for hydraulic accessories for GIS (if any)	1	set	THB	517,767.00	517,767.00			XXXXX	XXXXX
1D7-9	Loose pressure gauge completed with necessary fitting for circuit breaker compartment accessories for GIS (3 phases set precision pressure gauge spare parts for GIS, can be combined with Gas density meter for CB compartment)	1	set	THB	Included	Included			XXXXX	XXXXX
1D7-10	Cost of Local Transportation for Item No. 1D7-1 thru 1D7-9	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	56,456.05	56,456.05
Total Price for Schedule 1D7				**THB**		**1,129,121.00**	**Baht**		**Baht**	**56,456.05**

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MEDIUM COST FOR BID NO. HSIS-S-02

1D11 : Spare Parts for Power Fuse, Fuse Link and Hook Stick

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D11-1	Fuse link or refill unit 7E for 33 kV power fuse (standard speed)	6		THB	74,349.00	446,094.00			XXXXX	XXXXX
1D11-2	Cost of Local Transportation for Item No. 1D11-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	22,304.70	22,304.70
Total Price for Schedule 1D11				**THB**		**446,094.00**	**Baht**		**Baht**	**22,304.70**

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MEDIUM COST FOR BID NO. HSIS-S-02

1D12 : Spare Parts for AC&DC Distribution Board and Termination Box

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D12-1	Fuse time lag type 500A	6					7,504.00	45,024.00	XXXXX	XXXXX
1D12-2	Cost of Local Transportation for Item No. 1D12-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	2,251.20	2,251.20
Total Price for Schedule 1D12							**Baht**	**45,024.00**	**Baht**	**2,251.20**

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MEDIUM COST FOR BID NO. HSIS-S-02

1D22 : Spare Parts for Grounding Material

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	**Supply of Equipment**				**Local Transportation** (excluding VAT) Baht	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D22-1	Portable temporary grounding tools for maintenance as per Specification attached	1		THB	476,315.20	476,315.20			XXXXX	XXXXX
1D22-2	Cost of Local Transportation for Item No. 1D22-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	23,815.76	23,815.76
Total Price for Schedule 1D22				**THB**	**476,315.20**		**Baht**		**Baht**	**23,815.76**

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MEDIUM COST FOR BID NO. HSIS-S-02

1D24 : Spare Parts for Control and Protection System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation (excluding VAT) Baht	
						Foreign Supply CIF Thai Port		Local Supply Ex-works Price (excluding VAT) Baht			
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D24-1	DSS : Spare Parts	-See Bill of Materials for 1D24-1 -Specification No. 1008	1	SET				10,350,389.00	10,350,389.00	XXXXX	XXXXX
1D24-2	Cost of Local Transportation for Item No. 1D24-1		Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	59,969.00	59,969.00
Total Price for Schedule 1D24								**Baht** **10,350,389.00**		**Baht** **59,969.00**	

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MEDIUM COST FOR BID NO. HSIS-S-02

1D25 : Spare Parts for Fault Recording System

SUPPLY AND CONSTRUCTION OF 115 KV PATTANI SUBSTATION (GIS)

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D25-1	DSS : Digital Fault Recorder Equipment	-Spare DFR equipment is same ordering number as supplied in schedule 1AB25-1 -Specification Nos. 1003, and 1008	1	SET				847,556.00	847,556.00	XXXXX	XXXXX
1D25-2	Cost of Local Transportation for Item No. 1D25-1		Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	16,565.00	16,565.00
Total Price for Schedule 1D25								**Baht** **847,556.00**		**Baht** **16,565.00**	

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MEDIUM COST FOR BID NO. HSIS-S-02

1D37 : Spare Parts for Medium Voltage Switchgear

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HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
					Foreign Supply		Local Supply			
					CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D37-1	Gas density meter spare parts for medium voltage switchgear	1	set	THB	47,076.00	47,076.00			XXXXX	XXXXX
1D37-2	Pressure relief device spare parts for medium voltage switchgear (1 EA for each type/each operating pressure)	1	set	THB	16,081.00	16,081.00			XXXXX	XXXXX
1D37-3	SF6 gas filling cart accessories for Medium Voltage Switchgear	1	set	THB	283,333.00	283,333.00			XXXXX	XXXXX
1D37-4	Cost of Local Transportation for Item No. 1D37-1 thru 1D37-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	17,324.50	17,324.50
Total Price for Schedule 1D37				**THB**		**346,490.00**	**Baht**		**Baht**	**17,324.50**

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MEDIUM COST FOR BID NO. HSIS-S-02

2E24 : Control and Protection System

SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV HAT YAI 2 SUBSTATION

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
2E24-1	Multi-function Protective IED (87L, 21BU, 67N, 50BF, 79, 25, 51S/51SG)	-Supply as Loose Part for Installation at Hat Yai 2 Substations -Secondary Current Rating : 1A and 5A -IED shall include both I/O Modules (Binary Input, Binary Output, and Analog Input) and four (4) ports of Ethernet (IEC61850 Ed2 Standard with PRP). -Specification No. 1008 -Same Type as Supplied in Item 1AB24-1 (Item no.3 in Bill of Materials For 1AB24-1)	2	EA				845,693.00	1,691,386.00	XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

2E24 : Control and Protection System

SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV HAT YAI 2 SUBSTATION

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
2E24-2	E1 CONVERTER	-2 Sets of 30 meters Coaxial Cables (RG179), and 2 Sets of Multimode Patch Cord Cables shall be supplied in each E1 Converter -Specification No. 1008 -Same Type as Supplied in Item 1AB24-1 (Item no.28 in Bill of Materials For 1AB24-1)	2	SET				159,028.00	318,056.00	XXXXX	XXXXX
2E24-3	Multi-function Protective IED (87L, 21BU, 67N, 50BF, 79, 25, 51S/51SG)	-Supply as Spare Part for Item No. 2E24-1 -Same Type as Supplied in Item No. 2E24-1	1	EA				845,693.00	845,693.00	XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-02

2E24 : Control and Protection System

SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV HAT YAI 2 SUBSTATION

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
2E24-4	E1 CONVERTER	-Supply as Spare Part for Item No. 2E24-2 -Same Type as Supplied in Item No. 2E24-2	1	SET				159,028.00	159,028.00	XXXXX	XXXXX
2E24-5	Cost of Local Transportation for Item No. 2E24-1 thru 2E24-4		Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	26,461.00	26,461.00
Total Price for Schedule 2E24								**Baht** **3,014,163.00**		**Baht** **26,461.00**	

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MEDIUM COST FOR BID NO. HSIS-S-02

3E24 : Control and Protection System

SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV YALA 1 SUBSTATION

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
3E24-1	Multi-function Protective IED (87L, 21BU, 67N, 50BF, 79, 25, 51S/51SG)	-Supply as Loose Part for Installation at Yala 1 Substations -Secondary Current Rating : 1A -IED shall include both I/O Modules (Binary Input, Binary Output, and Analog Input) and four (4) ports of Ethernet (IEC61850 Ed2 Standard with PRP). -Specification No. 1008 -Same Type as Supplied in Item 1AB24-1 (Item no.3 in Bill of Materials For 1AB24-1)	2	EA				845,693.00	1,691,386.00	XXXXX	XXXXX

นางสาวอาสยา ช่างวิทยาการ
หจตส-ห.
27 ธ.ค. 66

นายประวิทย์ เลิศโกวิทย์
ผู้อำนวยการฝ่ายวิศวกรรมระบบส่ง
27 Nov 2023

MEDIUM COST FOR BID NO. HSIS-S-02

3E24 : Control and Protection System

SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 KV YALA 1 SUBSTATION

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
3E24-2	E1 CONVERTER	-2 Sets of 30 meters Coaxial Cables (RG179), and 2 Sets of Multimode Patch Cord Cables shall be supplied in each E1 Converter -Specification No. 1008 -Same Type as Supplied in Item 1AB24-1 (Item no.28 in Bill of Materials For 1AB24-1)	2	SET				159,028.00	318,056.00	XXXXX	XXXXX
3E24-3	Cost of Local Transportation for Item No. 3E24-1 thru 3E24-2		Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	26,461.00	26,461.00
Total Price for Schedule 3E24								**Baht** **2,009,442.00**		**Baht** **26,461.00**	

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นายประวิทย์ เลิศโกวิทย์
ผู้อำนวยการฝ่ายวิศวกรรมระบบส่ง
27 Nov 2023

Important Information
for

Invitation to Bid No. HSIS-S-02

The purpose of this section is to inform the Bidders to **carefully study** the details of the revised terms and conditions in the bidding documents. The following provisions have been **recently revised** as stated hereunder:

Additional Regulation

Information to be submitted with Bid as required in Item 3.2 has been revised.

The following paragraph in Remarks Item 4. of page 11 of Additional Regulation has been deleted :-

"In case that any Major Shareholder(s) of the Bidder is (are) juristic person(s), and such juristic person(s) has (have) Major Shareholder(s) who is (are) juristic person(s), the Bidder shall submit the list of the Major Shareholder(s)/ the Names of Manager/ Managing Partner/ Managing Director/ Executive/ Person Who Is Authorized to Manage the Business/ Partner/ Partner with Unlimited Liability/ of such juristic person(s) as per page 10-11 of this Additional Regulation. The requirement of submission of list of the Major Shareholder(s)/ the Names of Manager/ Managing Partner/ Managing Director/ Executive/ Person Who Is Authorized to Manage the Business/ Partner/ Partner with Unlimited Liability/ of such juristic person(s) shall apply to 2 tiers of Major Shareholder(s) who is(are) juristic person(s)."

Article A-3. Eligibility of Bidders: General Requirements and Article B-8. Information to be Submitted with Bid

Bidders shall provide written anti-corruption policies and guidelines as specified in Data Sheet.

Article A-4. Eligibility of Bidders: Technical Requirements

The Bidder shall be named in EGAT Accepted Bidders List for Supply and Construction of Substations attached at the end of Section A. Invitation to Bid.

Some of the Equipment to be proposed by the Bidder shall be only those specified in EGAT Accepted List for such Equipment as attached at the end of Section A. Invitation to Bid. The Bidder shall carefully study Article A-4. Eligibility of Bidders: Technical Requirements and make sure to propose Equipment correctly.

Article B-3. Bid Security

Terms and conditions regarding the forms of bid security have been revised.

Article E-15. Performance Security and Specimen of Performance Security

Terms and conditions regarding the forms and the amount of performance security have been revised.

Article E-16. Inspection and Tests

Terms and conditions regarding inspection and tests have been revised.

Article E-35. Advance Payment Security

Terms and conditions regarding the forms of advance payment security have been revised.

Article F-8. Drawings and Documents to be Furnished by the Contractor

Terms and conditions regarding EGAT's document management system in item a. have been added. The number of copies of the drawings and documents in Print and CD-ROM has been revised and Item c. Reproducible Drawings has been deleted.

Details in Drawings and Documents Required for Each Particular Equipment at the end of section F have been revised.

Article F-15. Liquidated Damages for Late Completion and Late Delivery

The total amount of liquidated damages shall not exceed ten (10) per cent of the total Contract Price, thereafter EGAT shall have the right, at its sole discretion, to terminate the Contract.

Article F-18. Maintenance Guarantee and Article F-19. Maintenance Security

In case all obligations on the part of the Contractor for the work under separated guarantee period under the Contract have been fulfilled, the Contractor is entitled to request EGAT to return the maintenance security guaranteed for such work regardless of the non-issuance of the Final Acceptance Certificate.

Article F-19. Maintenance Security and Specimen of Maintenance Guarantee

Terms and conditions regarding the forms and the amount of maintenance security have been revised.

Article G-5. Safety of Personnel and Third Parties and Prevention of Accidents

Safety terms and conditions have been revised. The Contractor shall observe and comply with the revised terms and conditions including Table 1. Safety Criteria and Conditions, Table 2. Contractor's Safety Information, and Table 3. Contractor Safety Evaluation Checklist which have been added at the end of Section G.

DATA SHEET
for
Invitation to Bid No. HSIS-S-02
(Two-envelope)

This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Bidding Documents.

Article A-3. Eligibility of Bidders: General Requirements

The following requirement shall be added to item I.:

"j. Bidders shall provide written anti-corruption policies and guidelines with respect to procurement and supplies according to the Notification of the Anti-Corruption Co-Operation Committee Concerning Minimum Standards of the Anti-Corruption Policies and Guidelines in Relation to Procurement and Supplies Required to be Implemented by the Business Operator, Section 19 of the Government Procurement and Supplies Management Act B.E. 2560 (A.D. 2017)."

Article B-3. Bid Security

The amount of bid security shall be USD 1,107,130.- or THB 40,100,000.-.

Article B-4. Validity of Bids

The validity of the bid shall be for three hundred (300) Days from the date specified for opening of technical proposals.

Article B-8. Information to be Submitted with Bid

The following document shall be added to Article B-8. Information to be Submitted with Bid:

s. Bidder's anti-corruption policies and guidelines in relation to procurement and supplies together with the completely filled out Anti-Corruption Compliance Checklist as provided.

Article F-15. Liquidated Damages for Late Completion and Late Delivery, item a. For Complete Construction of Substation,

If the Contractor fails to meet the completion date for Schedule 1 : 115 kV Pattani Substation (GIS), the liquidated damages shall be at the rate of one-tenth of one (0.10) per cent of the total Contract Price for that schedule for each Day of delay. This sum is payable regardless of the actual loss and/or damages incurred.

Maintenance Guarantee Period

- For all Work except 500 kV System

  The Contractor shall guarantee the proper functioning of the Work for a period of one (1) Year except the following Equipment the guarantee period of which shall be as follows :

Equipment	Period of Guarantee (Year)
- Fault Recording System	2
- Control and Protection System	2

- For 500 kV System

  The Contractor shall guarantee the proper functioning of the Work for a period of five (5) Years.

Defective Equipment to be replaced with the whole new set

Not Applicable

Anti-Corruption Compliance Checklist

(Consortium)

Bidders shall provide written anti-corruption policies and guidelines with respect to procurement and supplies pursuant to the Notification of the Anti-Corruption Co-Operation Committee Concerning Minimum Standards of the Anti-Corruption Policies and Guidelines in Relation to Procurement and Supplies Required to be Implemented by the Business Operator, in accordance with Section 19 of the Government Procurement and Supplies Management Act B.E. 2560 (A.D. 2017). This checklist shall be submitted with Bids.

Project : .....

State Agency: Electricity Generating Authority of Thailand

Member No. ... of the consortium:

.....

Item	Yes	No	Reference (Please specify Article)
1. Bidders have any written anti-corruption policies and guidelines which have been communicated to all levels of employees.			
2. Bidders impose penalty or regulations against corruption.			
3. Bidders have accessible channels or systems to report any suspicions or queries related to corruption.			
4. Bidders have internal personnel or unit explicitly responsible for the prevention of corruption.			

We hereby confirm that all above statements are true and correct.

Signed

_____

(Name of Bidder)

(Authorized person)

Stamp company seal (if any)

Anti-Corruption Compliance Checklist

(Individual Company / Joint Venture)

Bidders shall provide written anti-corruption policies and guidelines with respect to procurement and supplies pursuant to the Notification of the Anti-Corruption Co-Operation Committee Concerning Minimum Standards of the Anti-Corruption Policies and Guidelines in Relation to Procurement and Supplies Required to be Implemented by the Business Operator, in accordance with Section 19 of the Government Procurement and Supplies Management Act B.E. 2560 (A.D. 2017). This checklist shall be submitted with Bids.

Project : .....

State Agency: Electricity Generating Authority of Thailand

Bidder Name : .....

Item	Yes	No	Reference (Please specify Article)
1. Bidders have any written anti-corruption policies and guidelines which have been communicated to all levels of employees.			
2. Bidders impose penalty or regulations against corruption.			
3. Bidders have accessible channels or systems to report any suspicions or queries related to corruption.			
4. Bidders have internal personnel or unit explicitly responsible for the prevention of corruption.			

We hereby confirm that all above statements are true and correct.

Signed

_____

(Name of Bidder)

(Authorized person)

Stamp company seal (if any)

ELECTRICITY GENERATING AUTHORITY OF THAILAND

Nonthaburi
Thailand

INVITATION TO BID NO. HSIS-S-02

SUPPLY AND CONSTRUCTION OF 115 kV PATTANI SUBSTATION (GIS), SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 kV HAT YAI 2 AND 115 kV YALA 1 SUBSTATIONS

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

(TWO-ENVELOPE)

A-1. Invitation

The Electricity Generating Authority of Thailand (EGAT) hereby invites sealed bids for supply and construction of 115 kV Pattani Substation (GIS), Supply of Control and Protection Equipment for 115 kV Hat Yai 2 and 115 kV Yala 1 Substations under High Voltage Substation Improvement in the Southern Area for Terrorism and Flood Protection as described herein in accordance with terms, conditions and Specifications described in these Bidding Documents.

A-2. Work Description

The supply and construction of 115 kV Pattani Substation (GIS), Supply of Control and Protection Equipment for 115 kV Hat Yai 2 and 115 kV Yala 1 Substations will be on a supply and construction basis, the Contractor shall be responsible for complete supply, installation, construction and also engineering design work to the standard specified and best modern practice. The substations to be constructed and the scope of work under this Invitation are described in Section H. Scope of Work.

A-3. Eligibility of Bidders: General Requirements

I. 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 well-established and maintain a permanent place of business.

c. The Bidder shall not be, or supply the Equipment, from the country under the state of Civil War.

d. The Bidder shall be a juristic person who manufactures or provides such material or services, as the case may be, and 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. The Bidder shall not be a Jointly Interested Bidder with other Bidders as from the date of EGAT's issuance of the 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.

f. The Bidder shall not either be EGAT's consultant or involving 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 for the ones who are officially ordered by EGAT to act or participate therein.

g. 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.

h. In case of a joint venture or consortium, the Bidder shall carry out all the work under such formation from the time of bidding until the fulfillment of the Contract.

i. ***The Bidder must have purchased the bidding documents from EGAT. For a joint venture or a consortium, only one (1) member of the joint venture or consortium is required to purchase the bidding documents.***

In case the Bidder's name is not exactly the same as the purchaser's name, the purchaser shall notify EGAT of the name of the Bidder in writing prior to the bid opening time.

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

a. The Bidder shall have adequate fund to meet financial obligations incidental to this Contract.

b. The Bidder shall supply documentary evidence established in accordance with Article B-8. Information to be Submitted with Bid to demonstrate

adequately that he is eligible to bid and is qualified to perform the Contract if his bid is accepted. Bidder should also demonstrate his capacity to perform the Work either with or without the use of subcontractor.

A-4. Eligibility of Bidders: Technical Requirements

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

a. Being well-established and maintaining a permanent place of business.

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.

If 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 pending claim of the Bidder.

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

b. The Bidder shall be named in EGAT Accepted Bidders List for Supply and Construction of Substations attached at the end of Section A. Invitation to Bid.

c. The Bidder shall propose Equipment manufactured by the qualified manufacturers who shall fulfill the following requirements:

1. Regularly manufacturing of Equipment of the type and similar ratings proposed.

2. Being well-established and maintaining a permanent place of business.

3. The manufacturer shall have the experience records that meet the requirements set forth herein.

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

4. 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 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, provided that each item of the equipment to be supplied under this bid shall be manufactured from the same source of supply as indicated in each of such relevant supply records as described in Item I.c.6 below.

Otherwise, it shall not be acceptable and shall be sufficient grounds for rejection.

For the avoidance of doubt, it is not allowed to combine the experience records of the previous companies or business units in order to meet the experience requirements.

5. For Equipment, having the same ratings as specified in EGAT Accepted List at the end of Section A. Invitation to Bid, shall have the following qualifications:

   5.1 These Equipment shall be named in the EGAT Accepted List.

   5.2 Having a past design test record of the Equipment as proposed, if specified in EGAT's specification. Such past design test record shall conform to the test specified in EGAT's specification (if required).

6. For Equipment not having the same ratings as specified in EGAT Accepted List at the end of Section A. Invitation to Bid:

   6.1 For 115 kV Ratings of Gas-Insulated Switchgear (GIS). These Equipment shall be manufactured by the qualified manufacturers who shall fulfill the following requirements:

      6.1.1 Having one of the following qualifications:

         6.1.1.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT.

         OR

         6.1.1.2 Having a supply record of Equipment of the type proposed (type of enclosure, interrupter of circuit breaker, rated filling gas pressure) at the nominal system voltage of 110 kV or above, busbar current of 2000 A or above, 40 kA or above, with successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least three (3) substations of which total GIS bays shall not be less than twelve (12).

         However, the Equipment of the type and short circuit current ratings proposed shall have a supply record of successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least one (1) substation of which total GIS bays shall not be less than four (4).

         In case that the supply record of Equipment of the type and ratings proposed fulfills the

requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use of at least three (3) substations of which total GIS bays shall not be less than twelve (12) and having minimum one (1) year in an overseas country (not his own country). The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

6.1.2 Having a past design test record of the Equipment as proposed, if specified in EGAT's specification. Such past design test record shall conform to the test specified in EGAT's specification.

6.2 For Control and Protection Panel, having the following qualifications:

6.2.1 Being local manufacturer.

6.2.2 Having one of the following qualifications:

6.2.2.1 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.

OR

6.2.2.2 Being listed in EGAT ACCEPTED MANUFACTURER LIST FOR CONTROL AND PROTECTION PANEL (LOCAL MANUFACTURER) attached at the end of Section A. Invitation to Bid.

The design of Equipment layout shall be performed by the manufacturer of control and protection panel under the Substation Control and Protection System Integrator's supervision. However, the design and engineering of the complete substation protection and automation system shall be performed by the Substation Control and Protection System Integrator.

6.3 For Substation Control and Protection System Integrator

Having one of the following qualifications:

6.3.1 Having successful experience in EGAT's digital substation.

OR

6.3.2 Having at least two (2) records of practical experience on design and implementation of an IEC 61850 based control and protection system of a complete conventional or GIS with 110 kV or above digital substation (both station bus and process bus) with at least two (2) consecutive years of successful operation in overseas utilities (not his own country).

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

a. The Bidder shall have sufficient capacity to carry out the work.

b. 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. In case the Bidder is a joint venture/consortium, either member of the joint venture/consortium 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.

c. The Bidder himself or his subcontractors, at the time of submitting this proposal, shall not carry excessive work nor be in a default position with respect to work with EGAT. Unsatisfactory past performance on Contract awarded by EGAT may be a sufficient reason of being disqualified.

d. The Bidder shall propose Equipment from manufacturers who fulfill the requirements below. If there is any deficiency, EGAT reserves the right to require the Bidder to propose new manufacturer or new type/model of Equipment without any additional cost to EGAT.

1. Regularly manufacturing of Equipment of the type and similar ratings proposed.

2. Being well-established and maintaining a permanent place of business

3. The manufacturer shall have the experience records that meet the requirements set forth herein.

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

4. 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 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, provided that each item of the equipment to be supplied under this bid shall be manufactured from the same source of supply as indicated in each of such relevant supply records as described in Item II.d.6 below.

   For the avoidance of doubt, it is not allowed to combine the experience records of the previous companies or business units in order to meet the experience requirements.

5. For Equipment, having the same ratings as specified in EGAT Accepted List at the end of Section A. Invitation to Bid, shall have the following qualifications:

    5.1 These Equipment shall be named in the EGAT Accepted List.

    5.2 Having a past design test record of the Equipment as proposed, if specified in EGAT's specification. Such past design test record shall conform to the test specified in EGAT's specification (if required).

6. For Equipment not having the same ratings as specified in EGAT Accepted List at the end of Section A. Invitation to Bid:

    6.1 For 115 kV Ratings of Power Circuit Breaker, Disconnecting Switch and Compact Switchgear shall be manufactured by the qualified manufacturers who shall fulfill the following requirements:

        6.1.1 Having one of the following qualifications:

            6.1.1.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT.

            OR

            6.1.1.2 Having a supply record of Equipment of the type proposed at nominal system voltage of 110 kV or above, 2000 A or above, 40 kA or above, with successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least three (3) three phase sets.

            However, the Equipment of the type and short circuit current ratings proposed shall have a supply record of successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least one (1) three phase set.

            In case that the supply record of Equipment of the type and ratings proposed fulfilled the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use for at least one (1) year in an overseas country (not his own country) and at least three (3) three phase sets. The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or

not to consider or accept the proposed developed or modified type.

6.1.2 Having a past design test record of the Equipment as proposed, if specified in EGAT's specification. Such past design test record shall conform to the test specified in EGAT's specification.

6.2 For 115 kV Ratings of following Equipment: Instrument Transformer and Surge Arrester. These Equipment shall be manufactured by the qualified manufacturers who shall fulfill the following requirements:

6.2.1 Having one of the following qualifications:

6.2.1.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT.

OR

6.2.1.2 Having a supply record of Equipment of the type and ratings proposed with successful operation/use of at least three (3) three phase sets and having minimum three (3) consecutive years in an overseas country (not his own country).

In case that the supply record of Equipment of the type and ratings proposed fulfills the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use of at least three (3) three phase sets and having minimum one (1) year in an overseas country (not his own country). The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

Supply records of the higher rating Equipment shall not be considered if the Bidder does not propose such higher rating Equipment in his bid.

6.2.2 Having a past design test record of the Equipment as proposed, if specified in EGAT's specification. Such past design test record shall conform to the test specified in EGAT's specification.

6.3 For 33, 22 and 11 kV ratings of following Equipment: Metal-Clad SF_6 Gas Insulated Switchgear, Power Circuit Breaker, Instrument Transformer, Disconnecting Switch and Surge Arrester:

Having one of the following qualifications:

6.3.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT.

OR

6.3.2 Having a supply record of Equipment of the type and ratings proposed with successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least three (3) three phase sets. The ratings and features of Equipment shall be the same or similar rating as EGAT specifies.

In case that the supply record of Equipment of the type and ratings proposed fulfilled the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use of at least one (1) year in an overseas country (not his own country) and at least three (3) three phase sets. The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

Supply records of the higher rating Equipment shall not be considered if the Bidder does not propose such higher rating Equipment in his bid.

6.4 For Distribution Transformer, Power Fuse, AC&DC Distribution Board and Lighting Relay Panel (LRP), Load Center Unit Substation (LCUS), Junction Box, Battery Charger, Substation Steel Structure, 33 kV and below Cable Terminations, XLPE Power Cable, Power Cable, Control Cable and Switchboard Wire, Lighting Cable, Copper Ground Wire, Overhead Ground Wire, Aluminum Conductor, Optical Fiber Cable, Switchyard Lighting Fixtures, Aluminum Tube, Compression Connector and Miscellaneous Hardware, Bus Fittings, Ground Rod, Thermite Welding Material, Grounding Hardware, Conduit and Conduit Fittings:

6.4.1 Being local manufacturer for the following Equipment:

Distribution Transformer, AC&DC Distribution Board and Lighting Relay Panel (LRP), Load Center Unit Substation (LCUS), Junction Box, Battery Charger, Substation Steel Structure, 115 kV and below XLPE Power Cable, Power Cable, Control Cable and

Switchboard Wire, Lighting Cable, Copper Ground Wire, Overhead Ground Wire, Aluminum Conductor, Single mode optical fiber cable, Switchyard Lighting Fixtures, Aluminum Tube, Compression Connector and Miscellaneous Hardware, Thermite Welding Material and Conduit.

6.4.2 Having been granted a license for producing standard product by Thai Industrial Standard Institute (TISI), Ministry of Industry for the following Equipment:

60 kV through 115 kV XLPE Power Cable, Lighting cable and Aluminum conductor.

6.4.3 Having one of the following qualifications:

6.4.3.1 Having supply record of Equipment of the type and similar ratings proposed with successful operation/use for at least one (1) year.

OR

6.4.3.2 Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein (For the local manufacturer).

6.5 For Insulator:

Having one of the following qualifications:

6.5.1 Having supply record with successful operation/use for at least three (3) consecutive years in an overseas country (not his own country) and for following equipment:

6.5.1.1 Suspension Insulator, at least 10,000 units having the similar ANSI class as proposed.

6.5.1.2 Station Post Insulator, having the similar ANSI technical reference number as proposed.

OR

6.5.2 Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein (For the local manufacturer).

6.6 For Stationary Battery:

Having one of the following qualifications:

6.6.1 Having supply record of Equipment of the type and similar ratings proposed with successful operation/use in substations/switchyards of at least three (3) consecutive years and at least three (3) sets.

In case that the supply record of Equipment of the type and similar ratings proposed fulfilled the requirements, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use of at least one (1) year. The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgement whether or not to consider or accept the proposed developed or modified type.

OR

6.6.2 Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein (For the local manufacturer).

6.7 For above 33kV through 115 kV Outdoor Type Cable Termination and Cable Termination for GIS:

Having one of the following qualifications:

6.7.1 Proposing the Equipment of the type and ratings which have ever been accepted by EGAT.

OR

6.7.2 Having a supply record of Equipment of the type and ratings proposed with successful operation/use for at least three (3) consecutive years in an overseas country (not his own country) and at least five (5) three phase sets. The ratings and features of Equipment shall be the same or similar rating as EGAT specifies.

In case that the supply record of Equipment of the type and ratings proposed fulfilled the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use for at least one (1) year in overseas country (not his own country) and at least five (5) three phase sets. The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

Supply records of the higher rating Equipment shall not be accepted if the Bidder does not propose such higher rating Equipment in his bid.

6.8 Proposing the protective relays from the manufacturers as listed in EGAT ACCEPTED MANUFACTURER LIST FOR PROTECTIVE RELAY attached at the end of Section A. Invitation to Bid and shall be in compliance with the details specified in EGAT's Specifications. Type/Model of the protective relays proposed shall be as specified in EGAT ACCEPTED MULTIFUNCTION RELAY LIST attached at the end of Section A. Invitation to Bid.

6.9 For Fault Recording System:

6.9.1 Having one of the following qualifications:

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

OR

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

6.9.1.2.1 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.

OR

6.9.1.2.2 Being listed in EGAT ACCEPTED MANUFACTURER LIST FOR CONTROL AND PROTECTION PANEL (LOCAL MANUFACTURER) attached at the end of Section A. Invitation to Bid.

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.

6.9.2 Proposing the Fault Recording System (FRS) from the manufacturers as listed in EGAT ACCEPTED MANUFACTURER LIST FOR FAULT RECORDING SYSTEM attached at the end of Section A. Invitation to Bid and shall be in compliance with the details specified in EGAT's Specifications. Type/model of FRS proposed shall be as specified in EGAT ACCEPTED FAULT

RECORDING SYSTEM LIST attached at the end of Section A. Invitation to Bid.

6.10 For supervisory software of IEC 61850 based substation control and protection system:

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

6.11 For Merging Unit (MU)

Having one of the following qualifications:

6.11.1 Proposing the MU of the type and rating which has already been successfully operated in EGAT's digital substation.

OR

6.11.2 Proposing the MU from the manufacturers as listed in EGAT ACCEPTED MANUFACTURER LIST FOR PROTECTIVE RELAY (regardless of country) attached at the end of Section A. Invitation to Bid and shall be in compliance with the details specified in EGAT's Specifications.

AND

Having supply records of at least three (3) digital substations (both station bus and process bus) of the type proposed with at least three (3) consecutive years of successful operation at nominal system voltage of 110 kV or above in overseas utilities (not his own country).

6.12 For Bay Control Unit (BCU)

Having one of the following qualifications:

6.12.1 Proposing the BCU of the type and rating which has already been successfully operated in EGAT's digital substation.

OR

6.12.2 Proposing the BCU from the manufacturers as listed in EGAT ACCEPTED MANUFACTURER LIST FOR PROTECTIVE RELAY (regardless of country) attached at the end of Section A. Invitation to Bid and shall be in compliance with the details specified in EGAT's Specifications.

AND

Having supply records of at least three (3) digital substations (both station bus and process bus) of the type proposed with at least three (3) consecutive years of successful operation at nominal system voltage of 110 kV or above in overseas utilities (not his own country).

6.13 Being local manufacturer for steel supporting structure of Instrument Transformer, Surge Arrester and Disconnecting Switch.

6.14 For Closed-circuit television (CCTV) system and equipment:

6.14.1 Proposed camera and Network Video Recorder (NVR) manufacturer shall have a representative or a branch office of manufacturer in Thailand for at least ten (10) years.

6.14.2 Proposed brand of IP cameras shall have a supply record of IP cameras for at least five hundred (500) IP cameras per contract with successful operation/use for at least three (3) years in Thailand.

6.14.3 The bidder or subcontractor shall have one of the following qualifications:

6.14.3.1 Having experiences in installation and cabling of outdoor-type IP cameras for at least fifty (50) cameras per contract with successful operation/use for at least three (3) years in Thailand.

OR

6.14.3.2 Having experiences in optical fiber cabling in substation switchyards for at least five (5) substations per contract with successful operation/use for at least three (3) years in Thailand.

6.14.4 Being local manufacturer for the following Equipment: CCTV Rack cabinet, Monitoring desk, CCTV pole, 12-core ADSS optical fiber cable.

e. Proposing the manufacturer who has no just or proper claims pending against Equipment of the same type/model to be proposed under this bid.

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

f. Proposing reputable subcontractors, for the portion of the work to be subcontracted, having adequate technical knowledge, ability and capacity to perform such work and having at least three years experience in the performance of similar work and of equal magnitude to the work to be subcontracted. If any proposed subcontractor(s) is (are) not qualified in the opinion of EGAT, the Bidder is required to select other subcontractor(s) at his own cost to the satisfaction of EGAT.

Definitions:

Year(s) of operation/use: The period of operation Completion date or Commissioning date or Taking over date or Operation date or Put in service date stated in End User Certificate or the sufficient documentary evidence before bid opening.

A-5. 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-6. 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 Article B-3. Bid Security.

The original and each copy of the proposal shall be placed in two (2) separate sealed envelopes:

Envelope I which shall contain a sealed technical proposal, and
Envelope II which shall contain a sealed price proposal.

Envelope I

Technical proposal will be placed in separate sealed envelope marked in capital letters in the lower left-hand corner as follows:

INVITATION TO BID NO. HSIS-S-02

SUPPLY AND CONSTRUCTION OF 115 kV PATTANI SUBSTATION (GIS), SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 kV HAT YAI 2 AND 115 kV YALA 1 SUBSTATIONS

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

TECHNICAL PROPOSAL

The Envelope for the technical proposal shall contain the following :

a. the completed Proposal Data Forms of the proposed proposal(s)

b. reference documents pertaining to Bidder's qualification and experience under Article A-3. Eligibility of Bidders: General Requirements, A-4. Eligibility of Bidders: Technical Requirements, and Article B-8. Information to be submitted with Bid

c. delivery date guaranteed by Bidders

d. any minor deviations on Technical Specifications

e. any other technical information and drawings the Bidder deems to be adequate to explain his bid

f. Confirmation Form of not being a Jointly Interested Bidder with other Bidders and not being a person who undertakes any actions as an Obstruction of Fair Price Competition, and Registration/Non-registration with the Revenue Department as a VAT registrant

   If the Bidder has registered as a VAT registrant, he shall submit EGAT an evidence of VAT registration. On the contrary, if the Bidder is not registered as a VAT registrant, he shall inform EGAT whether he will register as a VAT registrant or not.

   In case the Bidder is a consortium, each member of the consortium shall fill in the Confirmation Form provided for consortium Bidders.

g. Filled-in Documentary List and documents required according to Additional Regulation

Strictly no prices or reference to price shall be made in the documentation contained in this Envelope. Violation of this requirement will be reason for rejection of the bid.

Envelope II

Price proposal will be placed in separate sealed envelope marked in capital letters in the lower left-hand corner as follows:

INVITATION TO BID NO. HSIS-S-02

SUPPLY AND CONSTRUCTION OF 115 kV PATTANI SUBSTATION (GIS), SUPPLY OF CONTROL AND PROTECTION EQUIPMENT FOR 115 kV HAT YAI 2 AND 115 kV YALA 1 SUBSTATIONS

HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

PRICE PROPOSAL

The Envelope for the price proposal shall contain the following :

a. price schedules according to Section C

b. price schedules data CD in Microsoft Excel format

c. Discount Form

The bid security in accordance with Article B-3. Bid Security shall be submitted in a separate envelope.

The original and three (3) hard copies of the technical proposal and the price proposal 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.

Technical proposals 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.

The technical proposals will be reviewed to determine their responsiveness to the Specifications and requirements.

The price proposals of the responsive technical proposals will be opened publicly at the place and time which will be specified at a later date, which will not be later than 150 Days after the technical proposal opening.

A-7. 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 270.- or Baht 8,000.-; 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

Note : At the time of bidding, EGAT's Specifications and all Drawings need not be submitted, although they are considered as part of the Bidding Documents.

EGAT Accepted Bidders List for Supply and Construction of Substations

No.	Bidder / Country	Acceptance for		
		500 kV	230 kV	115&69 kV
1	Hitachi Energy (Thailand) Limited / Thailand	YES	YES	YES
2	Grid Solutions SAS / France	YES	YES	YES
3	Hitachi Ltd. / Japan	YES	YES	YES
4	Hyosung Heavy Industries Corporation / Korea	YES	YES	YES
5	KEC International Limited / India	YES	YES	YES
6	Mitsubishi Corporation / Japan	YES	YES	YES
7	Mitsubishi Electric Corporation / Japan	YES	YES	YES
8	Precise System and Project Co., Ltd. / Thailand	YES	YES	YES
9	SEPCOIII Electric Power Construction Co., Ltd. / P.R.China	YES	YES	YES
10	Siemens Energy Limited / Thailand	YES	YES	YES
11	Sri U-Thong Limited / Thailand	YES	YES	YES
12	TEDA Company Limited / Thailand	YES	YES	YES
13	Joint Venture of Sinohydro and SEPCOIII (Sinohydro (Thailand) Company Limited / Thailand and SEPCOIII Electric Power Construction Co., Ltd. / P.R.China)	YES	YES	YES
14	Consortium of Grid Solutions (Thailand) Ltd. and Grid Solutions SAS (Grid Solutions (Thailand) Ltd. / Thailand and Grid Solutions SAS / France)	YES	YES	YES
15	Consortium of Larsen & Toubro Limited and Sri U-Thong Limited (Larsen & Toubro Limited / India and Sri U-Thong Limited / Thailand)	YES	YES	YES
16	Consortium of Loxley Public Co., Ltd. and Sri U-Thong Limited (Loxley Public Co., Ltd. / Thailand and Sri U-Thong Limited / Thailand)	YES	YES	YES
17	Consortium of Sinohydro and SEPCOIII (Sinohydro (Thailand) Company Limited / Thailand and SEPCOIII Electric Power Construction Co., Ltd. / P.R. China)	YES	YES	YES
18	SBV Consortium (Sumitomo Corporation / Japan, Black & Veatch (Thailand) Limited / Thailand and Italian-Thai Development / Thailand)	YES	YES	YES
19	The Consortium of Mitsubishi Corporation and DEMCO Public Company Limited (Mitsubishi Corporation / Japan and DEMCO Public Company Limited / Thailand)	YES	YES	YES
20	The Consortium of Precise System and Project Co., Ltd. and Hitachi Ltd. (Precise System and Project Co., Ltd. / Thailand and Hitachi Ltd. / Japan)	YES	YES	YES
21	The Consortium of Mitsubishi Corporation and PWH (Thailand) Company Limited (Mitsubishi Corporation / Japan and PWH (Thailand) Company Limited / Thailand)	YES	YES	YES
22	Consortium of Larsen & Toubro Limited and Mitsubishi Corporation (Larsen & Toubro Limited / India and Mitsubishi Corporation / Japan)	YES	YES	YES
23	Sri U-Thong & LPS CONSORTIUM (Sri U-Thong Limited / Thailand and LOXLEY POWER SYSTEMS COMPANY LIMITED / Thailand)	YES	YES	YES
24	The Consortium of DEMCO Public Company Limited, KINDEN Corporation and Sri U-Thong Limited. (DEMCO Public Company Limited / Thailand, KINDEN Corporation / Japan and Sri U-Thong Limited / Thailand)	YES	YES	YES
25	J.R.W. Utility - Siemens Energy Consortium (J.R.W. Utility Public Company Limited / Thailand and Siemens Energy Limited / Thailand)	YES	YES	YES
26	SIEMENS ENERGY & LPS CONSORTIUM (Siemens Energy Limited / Thailand and LOXLEY Power Systems Company Limited / Thailand)	YES	YES	YES
27	CONSORTIUM OF HYOSUNG HEAVY INDUSTRIES CORPORATION & FUTURE ELECTRICAL CONTROL COMPANY LIMITED (HYOSUNG HEAVY INDUSTRIES CORPORATION / Korea and FUTURE ELECTRICAL CONTROL COMPANY LIMITED / Thailand)	YES	YES	YES

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EGAT Accepted Bidders List for Supply and Construction of Substations

No.	Bidder / Country	Acceptance for		
		500 kV	230 kV	115&69 kV
28	Joint Venture of SEPCOIII-BYP (SEPCOIII Electric Power Construction Co., Ltd. / P.R. China and Benyapha Power Line Co., Ltd. / Thailand)	YES	YES	YES
29	Consortium of KEC International Limited and Mega Consultants Company Limited (KEC International Limited / India and Mega Consultants Company Limited / Thailand)	YES	YES	YES
30	Consortium of KEC International Limited and GreenTech Solution Co., Ltd. (KEC International Limited / India and GreenTech Solution Co., Ltd. / Thailand)	YES	YES	YES
31	Consortium of KEC International Limited and CS Power and Project Company Limited (KEC International Limited / Indai and CS Power and Project Company Limited / Thailand)	YES	YES	YES
32	Hyundai Engineering & Construction Co., Ltd. / Korea		YES	YES
33	Larsen & Toubro Limited / India		YES	YES
34	Kalpataru Power Transmission Limited / India		YES	YES
35	PWH (THAILAND) CO., LTD. / Thailand		YES	YES
36	DEMCO Public Company Limited / Thailand		YES	YES
37	ltalthai Engineering Co., Ltd. / Thailand		YES	YES
38	Sieyuan Electric Co., Ltd. / China		YES	YES
39	Black & Veatch (Thailand) Ltd. / Thailand		YES	YES
40	PESTECH Sdn. Bhd. / Malaysia		YES	YES
41	Shandong Taikai Power Engineering Co., Ltd. / China		YES	YES
42	SC-ST-BYP JOINT VENTURE COMPANY LIMITED / Thailand		YES	YES
43	China CAMC Engineering CO., LTD. / China		YES	YES
44	Kinden Corporation - Kinden (Thailand) Co., Ltd. Joint Venture (Kinden Corporation / Japan and Kinden (Thailand) Co., Ltd. / Thailand)		YES	YES
45	The Joint Venture of SRI and PWH (Sri U-Thong Limited / Thailand and PWH (Thailand) Company Limited / Thailand)		YES	YES
46	The Consortium of Kinden Corporation and Perfect Engineering Service Public Co., Ltd. (Kinden Corporation / Japan and Perfect Engineering Service Public Co., Ltd. / Thailand)		YES	YES
47	The Consortium of SCL-STC and ITE (Sinohydro Corporation Limited / China, Sinohydro (Thailand) Company Limited / Thailand and Italthai Engineering Co., Ltd. / Thailand)		YES	YES
48	The Consortium of Siemens Energy Limited and Sinkarnchang Company Limited (Siemens Energy Limited / Thailand and Sinkarnchang Company Limited / Thailand)		YES	YES
49	The Consortium of Siemens Energy Limited and Standard Performance Company Limited (Siemens Energy Limited / Thailand and Standard Performance Company Limited / Thailand)		YES	YES
50	JOINT VENTURE OF SCL, STC AND XD (Sinohydro Corporation Limited / China, Sinohydro (Thailand) Co., Ltd. / Thailand and Xian Electric Engineering Co., Ltd. / China)		YES	YES
51	JOINT VENTURE OF SINOHYDRO CORPORATION LIMITED AND SINOHYDRO (THAILAND) CO., LTD. (Sinohydro Corporation Limited / China and Sinohydro (Thailand) Co., Ltd. / Thailand)		YES	YES
52	LOXLEY & LPS CONSORTIUM (LOXLEY PUBLIC COMPANY LIMITED / Thailand and LOXLEY POWER SYSTEMS COMPANY LIMITED / Thailand)		YES	YES
53	The consortium of DEMCO Public Company limited and KINDEN Corporation (DEMCO Public Company Limited / Thailand and KINDEN Corporation / Japan)		YES	YES
54	The Consortium of Shanghai Electric Group Company Limited & Future Electrical Control Company Limited (Shanghai Electric Group Company Limited / China and Future Electrical Control Company Limited / Thailand)		YES	YES
55	Consortium of ITE - NCPE (Italthai Engineering Co., Ltd./ Thailand and North China Power Engineering Co., Ltd. of China Power Engineering Consulting Group / China)		YES	YES

EGAT Accepted Bidders List for Supply and Construction of Substations

No.	Bidder / Country	Acceptance for		
		500 kV	230 kV	115&69 kV
56	The Consortium of DEMCO Public Company Limited, KINDEN Corporation and Hyundai Electric & Energy Systems Company Limited (DEMCO Public Company Limited / Thailand and KINDEN Corporation / Japan and Hyundai Electric & Energy Systems Company Limited / Korea)		YES	YES
57	Grid Solutions (Thailand) Limited / Thailand		YES	YES
58	CGGC-PG Joint Venture / China		YES	YES
59	Consortium of Pinggao Group Co., Ltd. and Italthai Engineering Co., Ltd. (Pinggao Group Co., Ltd. / China and Italthai Engineering Co., Ltd. / Thailand)		YES	YES
60	Consortium of Linxon India Private Limited and Linxon (Thailand) Limited (Linxon India Private Limited / India and Linxon (Thailand) Limited / Thailand)		YES	YES
61	NARI GROUP CORPORATION / P.R. China		YES	YES
62	Joint Venture of STC-BYP (Sinohydro (Thailand) Co., Ltd. / Thailand and Benyapha Power Line Co., Ltd. / Thailand)		YES	YES
63	SINOHYDRO (THAILAND) CO., LTD. / Thailand		YES	YES
64	The Consortium of Kalpataru Power Transmission Limited and TSPG Company Limited (KPTL-TSPG Consortium) (Kalpataru Power Transmission Limited / India and TSPG Company Limited / Thailand)		YES	YES
65	Consortium of NARI GROUP CORPORATION and NARI (THAILAND) Co., Ltd. (NARI GROUP CORPORATION / P.R. China and NARI (THAILAND) Co., Ltd. / Thailand)		YES	YES
66	Consortium of Secco H.V. and Nari Group Corporation (Secco H.V. Co., Ltd. / Thailand and Nari Group Corporation / P.R. China)		YES	YES
67	The consortium of Grid Solutions (Thailand) Ltd. and J.R.W. Utility PLC. (Grid Solutions (Thailand) Limited / Thailand and J.R.W. Utility Public Company Limited / Thailand)		YES	YES
68	CONSORTIUM OF LARSEN & TOUBRO LIMITED AND EPCC ENGINEERING CO., LTD. (LARSEN & TOUBRO LIMITED / India and EPCC ENGINEERING CO., LTD. / Thailand)		YES	YES
69	CONSORTIUM OF LARSEN & TOUBRO LIMITED AND PPPO COMPANY LIMITED (LARSEN & TOUBRO LIMITED / India and PPPO COMPANY LIMITED / Thailand)		YES	YES
70	The Consortium of Shanghai Electric Group Company Limited & Yipintsoi Energy Company Limited (Shanghai Electric Group Company Limited / P.R. China and Yipintsoi Energy Company Limited / Thailand)		YES	YES
71	The Consortium of Transrail Lighting Limited, Shyama Power India Limited and CS Power and Project Company Limited (Transrail Lighting Limited / India and Shyama Power India Limited / India and CS Power and Project Company Limited / Thailand)		YES	YES
72	Hyundai Heavy Industries Co., Ltd. / Korea			YES
73	LOXLEY POWER SYSTEMS COMPANY LIMITED / Thailand			YES
74	Future Electrical Control Company Limited / Thailand			YES
75	NARI Group Corporation / China			YES
76	Consortium ITE and HHI (Italthai Engineering Co., Ltd. / Thailand and Hyundai Heavy Industries Company Limited / Korea)			YES
77	The Consortium of Demco Public Co., Ltd. Perfect Engineering Service Public Co., Ltd. And Demco Power Co., Ltd. (Demco Public Company Limited / Thailand, Perfect Engineering Service Public Co., Ltd. / Thailand and Demco Power Co., Ltd. / Thailand)			YES

EGAT Accepted Bidders List for Supply and Construction of Substations

No.	Bidder / Country	Acceptance for		
		500 kV	230 kV	115&69 kV
78	The Consortium of A2 Technologies Vietnam Co., Ltd. and A2 Technologies Co., Ltd. (Thailand) (A2 Technologies Vietnam Co., Ltd. / Vietnam and A2 Technologies Co., Ltd. (Thailand) / Thailand)			YES
79	Gunkul Power Development Company Limited / Thailand			YES
80	Secco H.V. Co., Ltd. / Thailand			YES
81	Larch & Laurel Co., Ltd. / Thailand			YES

Note

1 **Additionally, any bidders in the EGAT Accepted Bidders List for Supply and Construction of Substations of the same voltage level are allowed to form a new consortium or joint venture with other bidders in the accepted list. All parties of the new consortium or joint venture shall be accepted at the voltage level of the proposal.**

2 **The Bidders listed in EGAT Accepted Bidders List for Supply and Construction of Substations are in accordance with the requirements set forth in the Eligibility of Bidder No. EB-PQ-SUB-01. In bid evaluation, EGAT will not be bound to accept the bidder in EGAT Accepted Bidders List for Supply and Construction of Substations. EGAT reserves the right to accept the bidder considering the conformity of the bid requirements.**

EGAT Accepted Surge Arrester List

Description	Manufacturer / Country	Type / Model
396 kV SA (Porcelain)	Toshiba Hamakawasaki Factory / Japan	RVLQB-396HY
	Hubbell Power Systems Inc. / USA	VN/215516-9141
	Hitachi Energy Sweden AB / Sweden	EXLIM P396-GH550
	Tridelta Meidensha GmbH / Germany	SB 396/20.4-I
192 kV SA (Porcelain)	Toshiba Hamakawasaki Factory / Japan	RVLQC-192VY
	Siemens Aktiengesellschaft / Germany	3EP4 192-2PE32
	Hubbell Power Systems Inc. / USA	MVN192BB152AA
	Hitachi Energy Sweden AB / Sweden	EXLIM Q192-EH245
	Tridelta Meidensha GmbH / Germany	SB 192/10.3-0
108 kV SA (Porcelain)	Toshiba Hamakawasaki Factory / Japan	RVLQC-108VY
	Siemens Aktiengesellschaft / Germany	3EP4 108-2PE31
	Hubbell Power Systems Inc. / USA	MVN108BB088AA
	Hitachi Energy Sweden AB / Sweden	EXLIM Q108-EH123
	Tridelta Meidensha GmbH / Germany	SB 108/10.3-0

EGAT Accepted Gas Insulated Switchgear List

Description	Manufacturer / Country	Type/Model	Equipment Rating			Type of Mechanism			Alignment of Circuit Breaker	Referenced GIS Component		
										CT	VT	Bushing (Porcelain)
			kV	A	kA	Spring	Hydraulic	Hydraulic-Spring		Manufacturer / Country	Manufacturer / Country	Manufacturer / Country
550 kV, 4000 A, 50 kA GIS	Hitachi Energy Switzerland Ltd. / Switzerland	ELK-3	550	4000	63			✓	Horizontal	Pfiffner/Switzerland	Trench/Germany Ritz/Germany Pfiffner/Switzerland	LAPP/Germany XD/China
	Siemens AG / Germany	8DQ1P2	550	4000	50	✓			Horizontal	Trench/Germany	Trench/Germany	HSP/Germany
	GE Grid Solutions / France	T155	550	4000	50	✓			Horizontal	Pfiffner/Switzerland ENPAY/Turkey	GE/France Ritz/Germany	PPC/Austria Ceralep/France
	Hitachi Ltd. / Japan	IFT	550	6300	63		✓		Horizontal	Hitachi/Japan Meiden Chemical/Japan	Nissin/Japan Toko/Japan	N.G.K./Japan
	HD Hyundai Electric Co., Ltd. / Korea	550SR	550	4000	63		✓		Horizontal	Daeyoung/Korea Hyundai/Korea	Nissin/Japan TOKO/Japan Trench/Germany ***Nissin/China*** ***Sieyuan/China***	PPC/Germany PPC/Sweden TYCO/Switzerland N.G.K/Japan
	Mitsubishi Electric Corporation / Japan	500-GPS	550	4000	50	✓			Horizontal	Melco/Japan	Melco/Japan	N.G.K./Japan
	New Northeast Electric Group High Voltage Switchgear Co., Ltd./ China	ZF15-550	550	4000	63		✓		Horizontal	Liaoning Xinming Instrument Transformer Co.,Ltd./China	Liaoning Xinming Instrument Transformer Co.,Ltd./China	Liling Huaxin Insulator Technology Cp.,Ltd./China

EGAT Accepted Gas Insulated Switchgear List

Description	Manufacturer / Country	Type/Model	Equipment Rating			Type of Mechanism			Alignment of Circuit Breaker	Referenced GIS Component		
										CT	VT	Bushing (Porcelain)
			kV	A	kA	Spring	Hydraulic	Hydraulic-Spring		Manufacturer / Country	Manufacturer / Country	Manufacturer / Country
245 kV, 4000 A, 50 kA GIS	Hitachi Energy Switzerland Ltd. / Switzerland	ELK-14	245	4000	63 50			✓	Horizontal	Pfiffner/Switzerland ABB/Czech	Pfiffner/Switzerland Trench/Germany	LAPP/Germany XD/China
	GE Grid Solutions / France	B105	245	4000	50	✓			Horizontal	ENPAY/Turkey ALCE/Turkey GE/France	GE/France	PPC Insulators/Austria Ceralep/France GE/France
	Hyosung Heavy Industries Corporation / Korea	HSG-305B	300	4000	50	✓			Horizontal	Hyosung/Korea	Nissin/Japan Toko/Japan Sieyuan/China Nissin/China Toko/Korea	LAPP/Germany Huaxin/China XD/China
	Xian XD Switchgear Electric Co., Ltd./ China	ZF9-252	245	4000	50	✓			Vertical	XD/China Nanjing Zhida Electric/China	XD/China	XD/China
	New Northeast Electric Group High Voltage Switchgear Co., Ltd./ China	ZFW20-252	245	4000	50	✓			Horizontal	Liaoning Xinming Instrument Transformer Co.,Ltd./China	Liaoning Xinming Instrument Transformer Co.,Ltd./China	Liling Huaxin Insulator Technology Cp.,Ltd./China
	GE High Voltage Switchgear (Suzhou) Co., Ltd / China	B105	245	4000	50	✓			Horizontal	Nanjimg Zhida / China	Suzhou TOKO / China	Liling Huaxin Insulator Technology Cp.,Ltd./China
	HD Hyundai Electric Co., Ltd. / Korea	300SR	245	4000	50	✓			Horizontal	Daeyoung/Korea Hyundai/Korea	Nissin/Japan TOKO/Japan Trench/Germany	PPC/Germany PPC/Sweden TYCO/Switzerland N.G.K/Japan LAPP/Germany Zapel/Poland

EGAT Accepted Gas Insulated Switchgear List

Description	Manufacturer / Country	Type/Model	Equipment Rating			Type of Mechanism			Alignment of Circuit Breaker	Referenced GIS Component		
										CT	VT	Bushing (Porcelain)
			kV	A	kA	Spring	Hydraulic	Hydraulic-Spring		Manufacturer / Country	Manufacturer / Country	Manufacturer / Country
123 kV, 3150/2000 A, 40 kA GIS Main bus 3150 A Feeder 2000 A	ABB High Voltage Switchgear (Xiamen) Co., Ltd. / China	ELK-04	145	3150	40			✓	Vertical	Pfiffner/Switzerland Sihui/China ABB Jingke / China	Pfiffner/Switzerland Sieyuan/China ABB Jingke / China	XD/China
	HD Hyundai Electric Co., Ltd. / Korea	145SP-1	123	3150	40	✓			Vertical	Dongwoo/Korea	Nissin/Japan ***Nissin/China*** ***Sieyuan/China***	LAPP/Germany
	Hyosung Heavy Industries Corporation / Korea	HSG-144D	145	3150	40	✓			Vertical	Hyosung / Korea Samnung/Korea	Nissin/Japan Sieyuan/China Nissin/China Toko/Korea	LAPP/Germany Huaxin/China XD/China
	New Northeast Electric Group High Voltage Switchgear Co., Ltd./ China	ZFW20-145	145	3150	40	✓			Vertical	Liaoning Xinming Instrument Transformer Co.,Ltd./China	Liaoning Xinming Instrument Transformer Co.,Ltd./China	Liling Huaxin Insulator Technology Cp.,Ltd./China
	ILJIN Electric Co., Ltd. / Korea	IJS 1440	145	3150	40	✓			Vertical	Samnung / Korea	Toko Takaoka Korea / Korea	Lapp / Romania
	TOSHIBA Energy Systems & Solutions Corporation/ Japan	G3A-b	145	3150	40	✓			Vertical	TOSHIBA / Japan	TOSHIBA / Japan	TOSHIBA / Japan
	Shanghai Sieyuan High Voltage Switchgear Co., Ltd. / China	ZF28A-145	145	3150	40	✓			Vertical	Shanghai Sieyuan High Voltage Switchgear Co., Ltd. / China	Jiangsu Sieyuan Hertz Co.,Ltd. / China	XD/China
	Siemens High Voltage Switchgear Co., Ltd. Shanghai / China	8DN8	123	3150	40	✓			Vertical	Sihui/China	Nissin/China Sieyuan/China	XD/China

Note. The Equipment listed in EGAT Accepted Gas Insulated Switchgear List are in accordance with the requirements set forth in the Eligibility of Equipment No. EB-PQ-GIS-01. In bid evaluation, EGAT will not be bound to accepted the equipment in EGAT Accepted Gas Insulated Switchgear List. EGAT reserves the right to accept the equipment considering the conformity of the bid requirements.

EGAT Accepted Disconnecting Switch List

Description	Manufacturer / Country	Type/Model	Type of Mechanism
550 kV, 4,000 A air switch (Main blade: Motor operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	STC	CD101
	Grid Solution S.p.A. / Italy	S3CD550/4000	CMM
	Hapam B.V. / The Netherlands	SSBIII-550	MT150
550 kV, 4,000 A, air switch with grounding blade (Main blade: Motor operated, Grounding blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	STC-E	CD201
	Grid Solution S.p.A. / Italy	S3CDT550/4000	CMM for DS and ES
	Hapam B.V. / The Netherlands	SSBIII-AM-550	MT150 for DS and HAC for ES
245 kV, 4,000 A, air switch (Main blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB	CM110
	Grid Solutions / Italy	S3CD245/4000	CML
	Hapam B.V. / The Netherlands	SSBIII-245	HAC
245 kV, 4,000 A, air switch with grounding blade (Main blade: Manually operated, Grounding blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB-E	CM210
	Grid Solution S.p.A. / Italy	S3CDT245/4000	CML for DS and ES
	Hapam B.V. / The Netherlands	SSBIII-AM-245	HAC for DS and ES
245 kV, 3,150 A air switch (Main blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB	CM110
	Hapam B.V. / The Netherlands	SSBIII-245	HAC
	Grid Solution S.p.A. / Italy	S3C245/3150	CML
245 kV, 3,150 A air switch with grounding blade (Main blade: Manually operated, Grounding blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB-E	CM210
	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB-E Special	CM210
	Hapam B.V. / The Netherlands	SSBIII-AM-245	HAC for DS and ES
	Grid Solution S.p.A. / Italy	S3CT245/3150	CML for DS and ES

EGAT Accepted Disconnecting Switch List

Description	Manufacturer / Country	Type/Model	Type of Mechanism
123 kV, 3,150 A air switch (Main blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB	CM110
	Grid Solution S.p.A. / Italy	S3C123/3150	CML
	Hapam B.V. / The Netherlands	SSBIII-123	HAC
123 kV, 3,150 A air switch with grounding blade (Main blade: Manually operated, Grounding blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB-E	CM210
	Grid Solution S.p.A. / Italy	S3CT123/3150	CML for DS and ES
	Hapam B.V. / The Netherlands	SSBIII-AM-123	HAC for DS and ES
123 kV, 2,000 A air switch (Main blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB	CM110
	Grid Solution S.p.A. / Italy	S3C123/2000	CML
	Hapam B.V. / The Netherlands	SSBIII-123	HAC
123 kV, 2,000 A air switch with grounding blade (Main blade: Manually operated, Grounding blade: Manually operated)	Coelme Costruzioni Elettromeccaniche SpA / Italy	TCB-E Special	CM210
	Grid Solution S.p.A. / Italy	S3CT123/2000	CML for DS and ES
	Hapam B.V. / The Netherlands	SSBIII-AM-123	HAC for DS and ES

EGAT Accepted Multifunction Relay List

Manufacturer	Model	87L			21P			21BU			25			79			67			51			50BF			50EF			27/59			81			24			87K/87R/87C			87B (H)			87B (L)			60C (V)			60C (I)			Remark
		500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	
ABB	RED670 (*)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																
	REL670 (*)				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																
	RET670 (*)																			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																
	RET650 (**)																																			*	*	*													* 3-restraint
	REB650 (**)																																						■	■	■										
	REB670 (*)																																									■	■	■						
	REB500																																									■	■	■						
	REQ650 (**)										*	*	*												■																											* Only product version 2.1 is accepted.
GE	P543 (**)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																
	L90 (*)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																
	P443 (*)				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																
	D30									■																																									
	D60 (*)				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																
	ALPSDA1				■	■	■	■	■	■																																								
	P64x (*)																			**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	*	*	*													* Only P643, P645 ** Only P643
	T35																																				■	■											
	T60 (*)																■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■													
	P746																			*	*	*	*	*	*	*	*	*											■	■	■										* Must add 1 Relay for ground unit (More than 6 bays case)
	P740 (*)																																				■	■	■										
	P747																																				■	■	■										
	B90 (**)																																				■	■	■										
	B30																																				*	*	*										* Only for breaker and a half, double bus double breaker or main and transfer bus arrangement
	P14Nx																			■	■	■	■	■	■																									
	P14Dx (**)										■	■	■			*	■	■	■	■	■	■			**				■	■	■	■	■	■									■	■	■	■	■	■			* Only 3 Pole recloser function ** Only 3-phase breaker failure function
	P841										■	■	■				■	■	■	■	■	■																													
	P141 (**)																			■	■	■			■																											
	C60																							■	■																											
	F60										■	■	■			■				■	■	■		■	■																											
	F650 (**)										■	■	■			■				■	■	■																													
	SR350																			■	■	■																													

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EGAT Accepted Multifunction Relay List

Manufacturer	Model	87L			21P			21BU			25			79			67			51			50BF			50EF			27/59			81			24			87K/87R/87C			87B (H)			87B (L)			60C (V)			60C (I)			Remark
		500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	
GE	DRS																																																
	P94Vx																																																
	MIV																																																
	P94V																												*	*	*																			* None of VT input (open delta connection) for 59N.
	P143 (**)															*																																		* Only 3 Pole recloser function
SEL	SEL-311L																																																
	SEL-411L (*)																																																
	SEL-421 (*)																																																
	SEL-311C																																																
	SEL-387																																						*	*										* 4-restraint
	SEL-487E (*)																																																
	SEL-587																																																* 2-restraint
	SEL-787 (**)																																																* 4-restraint
	SEL-587Z																																																
	SEL-487B (*)																																																
	SEL-501																																																
	SEL-351A																																																
	SEL-451 (*)																																																
	SEL-751 (**)																																																
	SEL-551																																																
	SEL-751A																																																
Siemens	7SD52 (**)																																															
	7SA522 (**)																																																
	7SA6 Series (**)																																															
	7SA87 (*)																																																
	Duobias (**)																																															
	7UT6 (**)																																						*	*	*									* 5-restraint
	7UT82 (**)																																						*	*	*									* 2-restraint
	7UT86 (*)																																						*	*	*									* 3-restraint
	7SS52 (**)																																																
	7SS60																																																* Only for breaker and a half, double bus double breaker and main&transfer bus arrangement
	7SS85 (*)																																															
	7VK6 Series (**)																																														

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EGAT Accepted Multifunction Relay List

Manufacturer	Model	87L			21P			21BU			25			79			67			51			50BF			50EF			27/59			81			24			87K/87R/87C			87B (H)			87B (L)			60C (V)			60C (I)			Remark
		500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	
Siemens	7SJ62 (**)																																																
	7SJ85 (*)															*									**																								* Only 3 Pole recloser function ** Only 3-phase breaker failure function
	7SJ61 (**)																																																
	7SJ82 (**)																																																
	7VK61 (**)																																																
	7SL82 (**)																																																
	7SL87 (*)																																																
	7RW80 (**)																																																
	7SA82 (**)																																																
Toshiba	GRZ200 (*)																																																
	GRT200 (*)																																																
	GRD200 (*)																																																
	GRE140																																																
	GRB200 (*)																																																
	GRL200 (*)																																																
Schneider Electric	P543 (*)																																															
	P443 (*)																																															
	P645 (*)																																							*	*	*								* 5-restraint
	P746 (*)																																															
	P740 (**)																																															
	P821																							*	*																								* Only firmware version 1.F is accepted
	P141 (**)																																															
	P143 (**)																																															
	P120																																															
	P122																																															
ZIV	ZLV																																															
	IDV																																															
	IRL																																															
	IRV																																															
Ingeteam	EF-LD (*)																																			*	*	*							**	**	**				* Only 2-step overfluxing relay ** Only for open delta connection
	EF-ZT (*)																																											*	*	*				* Only for open delta connection

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EGAT Accepted Multifunction Relay List

Manufacturer	Model	87L			21P			21BU			25			79			67			51			50BF			50EF			27/59			81			24			87K/87R/87C			87B (H)			87B (L)			60C (V)			60C (I)			Remark
		500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	500 kV	230 kV	115 kV	
Ingeteam	EF-TD (*)																																		*	*	*							**	**	**				* 3-restraint ** Only for open delta connection
	EF-MD (*)																																											*	*	*				* Only for open delta connection
	DA-PT (**)																																											*	*	*				* Only for open delta connection
NR Electric	PCS-931 (*)																																																
	PCS-902 (*)																																																
	PCS-978 (*)																																																
	PCS-9611 (*)																																															*	* Only 1 unbalance input current.
	PCS-978S (*)																																															
	PCS-9611S (*)																																														*	* Only 1 unbalance input current.
	PCS-915SC (*)																																															
Mitsubishi	MRD-HA (**)																																									*								* 3-restraint
	MBP-H1A (**)																																											*	*				* In case of double bus single breaker arrangement, maximum 8 feeders with 1 bus coupler and 2 bus sections are allowed.
Protecta	DTIVA-E3																																															
	DTVA-E1																																															
	DTRV-E2																																															
	DGYD																																															

Remarks

(*) Applicable to IEC 61850 for both station bus and process bus with the certification issued by the third party laboratory and specifying that the said relay conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".

(**) Applicable to IEC 61850 only for station bus with the certification issued by the third party laboratory and specifying that the said relay conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".

Notes

1. The procedures for being listed in EGAT ACCEPTED MULTIFUNCTION 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 FAULT RECORDING SYSTEM LIST

Accepted Type	Manufacturer
IDM+	Qualitrol
M871	GE
7KE85 (*)	Siemens
TESLA 4000 (*)	ERL Phase
TR 2100	Rochester (RIS)
TR 3000 (**)	

Remarks

(*) Applicable to IEC 61850 for both station bus and process bus with the certification issued by the third party laboratory and specifying that the said FRS conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".

(**) Applicable to IEC 61850 only for station bus with the certification issued by the third party laboratory and specifying that the said FRS conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".

Notes

1. The procedures for being listed in EGAT ACCEPTED FAULT RECORDING SYSTEM 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 FRS 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.

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, UK
	Toshiba / Japan, Vietnam
	Schneider Electric / France, UK
	ZIV / Spain
	INGETEAM / Spain
	NR Electric / China
	Mitsubishi / Japan
	Protecta / Hungary
	Arcteq / Finland
	Sifang / China

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EGAT ACCEPTED MANUFACTURER LIST FOR FAULT RECORDING SYSTEM

Description	Manufacturer / Country
Fault Recording System	Qualitrol / UK
	Siemens / Germany
	Rochester / USA
	GE / USA
	ERL Phase / Canada

EGAT ACCEPTED MANUFACTURER LIST FOR

CONTROL AND PROTECTION PANEL (LOCAL MANUFACTURER)

Description	Manufacturer	Designed by
500 kV Control and Protection Panel	Hitachi Energy (Thailand) Limited	Hitachi Energy (Thailand) Limited
	Precise System and Project Co., Ltd.	Precise System and Project Co., Ltd.
	U-tah Industry Limited Partnership	U-tah Industry Limited Partnership
	SCI Electric Public Company Limited	Siemens Limited
230 kV and below Control and Protection Panel	Hitachi Energy (Thailand) Limited	Hitachi Energy (Thailand) Limited
	C&T Metal Products Co., Ltd.	Easun Reyrolle Limited, India
	Precise System and Project Co., Ltd.	Precise System and Project Co., Ltd.
	U-tah Industry Limited Partnership	U-tah Industry Limited Partnership
	SCI Electric Public Company Limited	SCI Electric Public Company Limited
	Timpano Electrical Co., Ltd.	Timpano Electrical Co., Ltd.
	Mantra Switchgear Co., Ltd.	Siemens Limited

Notes

1. The procedures for being listed in EGAT ACCEPTED MANUFACTURER LIST FOR CONTROL AND PROTECTION PANEL (LOCAL MANUFACTURER) can be provided by Transmission System Planning and Project Division on request.
2. The control and protection panel shall be manufactured and designed by the manufacturer/company written in the same row.

SCOPE OF WORK

H-1.General

1. 115 KV PATTANI SUBSTATION (GIS)

GENERAL

The renovation of Pattani Substation project to construct new 115kV Gas Insulated Switchgear (GIS) substation is initiated in order to replace the existing 115kV conventional substation, which have been utilized for many years shall no longer be inoperation after the completion of new GIS substation.

Pattani Substation is located at Talubosub-district, Mueang Pattani District, Pattani province.

The renovation of Pattani Substation consists of the digital 115kV GIS substation with Double bus Single Breaker scheme. The new 115kV GIS digital substation shall have ten (10) diameters with double bus single breaker scheme for the following feeders;

- One (1) feeder for 50MVA, 115-33-11kV power transformer**"KT1A"**
  (Plug-in 115kV XLPE cable 1-1/Cx800 sq.mm. per phase)
- One (1) feeder for 50MVA, 115-33-11kV power transformer**"KT2A"**
  (Plug-in 115kV XLPE cable 1-1/Cx800 sq.mm. per phase)
- One (1) feeder for **115kV Capacitor bank (24Mvar)**
- One (1) feeder for 115kV line to **PEA**
  (Plug-in 115kV XLPE cable 1-1/Cx800sq.mm. per phase)
- One (1) feeder for 115kV line to **PattaniGreen**
  (Plug-in 115kV XLPE cable 1-1/Cx800sq.mm. per phase)
- Two (2) feeders for 115kV lines No.1 and No.2 to **HATYAI 2 substation**
- One (1) feeder for 115kV line to **YALA 1substation**
- One (1) feeder for **115kV Spare Live**
- One (1) 115kV coupling bay

The contractor shall furnish a complete supply of equipment, materials and installation work etc.,which is necessary to complete construction substation on a supply and construction basis, in accordance with the Contract Document. The design work shall include, but not limited to, technical calculation, preparation of drawings, bill of materials for installation and construction work. For accomplishment of complete operational substation, Scope of contractor's work shall include connection to all public utilities i.e. electrical power, water and drainage. Testing and commissioning of all equipment required to make the substation function properly.

Besides, all detailed engineering design work, calculations, drawing preparation, submission of backup data, test reports instruction books (and), etc. shall be included.

1) As stated elsewhere in thisBidding documents, the drawings included in the bidding documents except drawing mark "For Construction" are for bidding purposes only and shall not be used for execution of the work.
2) The submitted drawings which are incomplete/unacceptable, or are the bidding document copies with minor modifications shall be returned unmarked to the contractor.
3) The drawings shall be furnished which provide all details required for thoroughly described equipment as well as installation methods and requirements. However, EGAT retains the right to request additional details if those furnished are perceived inadequate.

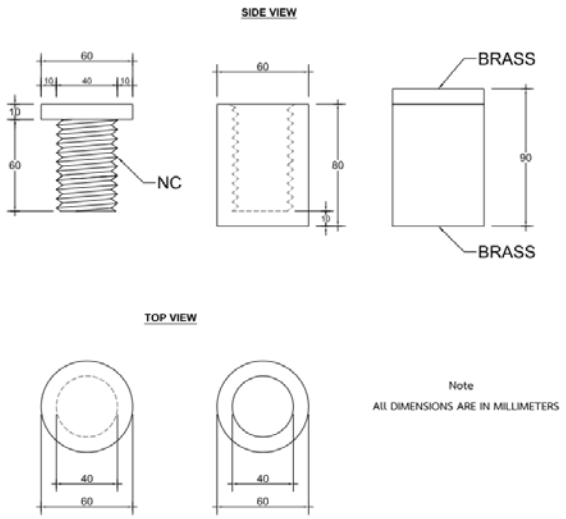
4) Calculations, backup data and documentation are required for all parts of the design. The furnished data shall verify completely that design is adequate for application purpose.

ELETRICAL PART

Schedule 1: 115 kV PATTANI Substation

Work included in this Contract.

1. **115/33kV Substation**
   - 1.1 Design, supply and installation of equipment required for a complete 115kVGIS substation.
   - 1.2 Design, supply and installation of equipment required for a complete 33kV system including, 33kV power supply system and 33kV switchgear system and all related equipment for the complete operation.
   - 1.3 To meet EGAT's service continuity requirements, the GIS gas compartment can be designed as indicated in the single line diagram or can be designed differently under a condition that the design of the gas compartment shall fulfill the requirements as specified in the specification.
   - 1.4 Design, supply and installation of miscellaneous hardware which comprises at least the following equipment for:
     - 1.4.1 The connection of the 115kV GIS cable interfaces to 50MVA 115-33-11kV power transformers (KT1A, KT2A).
     - 1.4.2 The connection of 115kVGIS cable interfacesto115kV overhead lines (115kV line to PEA and 115kV line to PattaniGreen).
     - 1.4.3 The connection of the new 115kV GIS air bushing to 115kV overhead lines.
     - 1.4.4 The connection of the new 115kV GIS air bushing to 115kV Capacitor bank.
     - 1.4.5 The connection of the 115-33-11kV power transformers (KT1A, KT2A) to the 33kV switchgears and station service system.
     - 1.4.6 The connection of the 33kV switchgears to 33kV PEA lines and 33kV Capacitor banks.
     - 1.4.7 The grounding equipment and miscellaneous hardware for 115-33-11kV power transformers (KT1A, KT2A),115kV Capacitor bank and 33kV Capacitor banks.
   - 1.5 Supply and installation of the marking pins for the referenced positions from the main bus shall be provided in the GIS building. The positions of the marking pins shall be shown on the drawings for future GIS extension and the quantity shall not be less than 4 sets. The making pins shall be made of brass or stainless steel that have the formation as follows:



1.6 The GIB shall not be installed in multiple stacks for the purpose of convenient maintenance.

1.7 The detachable walk way (cat walk) for visual inspection shall be properly installed on each GIS module and removable service platform, removable ladder shall be provided for GIS inspection.

1.8 The feeder nameplates as well as phasing, device and switching numbers shown on the GIS module shall be painted or mounted (detachable type) on the enclosure of GIS. The nameplates color shall conform to Dwg.No.SE-ID-7-01, and their sizes and locations shall be appropriate for GIS module.

1.9 The contractor shall supply identification plates for the both indoor and outdoor substation. The material, size and color shall be as shown on attached drawings except size of GIS identification plates shall be proposed by the contractor and approved by EGAT.

1.10 The sag and tension of phase wires and overhead ground wires shall be calculated and designed according to internationally-accepted standards by the contractor and the said calculation shall be submitted to EGAT for approval.

1.11 Design, supply and installation of 115kV XLPE cable system which comprises at least the following:

1.11.1 The design and calculation of the 115kV cable system shall conform to IECand/or IEEE standards. The said calculation shall be submitted to EGAT for approval.

1.11.2 The 115kV XLPE cable shall be single-core with copper conductor.

1.11.3 Design, supply and installation of the 115kV XLPE cables in an 115kV system complete from one end at the 115kV GIS to the other end, including cable trench, cable supporting structures, cable spacers, cable cleats,cable termination, cable termination supporting structures, miscellaneous hardware, link box, Sheath Voltage Limiter (SVL) (if applicable) and all related equipment, structures and hardware.

1.11.4 The 115kV XLPE cable shall be installed in **flat** formation. The cable supporting structure shall be made of stainless steel, aluminum alloy or galvanized steel. The contractor shall design, supply and install the cable supporting structures that are suitable for cable cleat and cable system installation, and their grounding.

1.11.5 The minimum bending radius of the 115 kV XLPE cable shall be checked by contractor for cable installation and cable trench design.

1.11.6 The contractor shall design and select the type of sheath bonding so that the 115kV 1/C-800 sq.mm XLPE cable shall be able to carry the continuous current no less than**825A**given that the ambient temperature is no less than 45C°. The effect of solar radiation shall be taken into account if deemed technically necessary. The other parameters used in the design shall be practical, reasonable, operational and conform to IEC or IEEE standard. The design report shall be submitted to EGAT for approval.

1.11.7 The contractor shall calculate the sheath induced voltage in accordance with IEEE standard. The sheath standing voltage at every point on the metallic sheath of 115kV XLPE cable system shall be less than **60V** under the rated continuous current. The cable jacket shall be properly designed to be protected from overvoltage. Determine the specification for a surge voltage limiter (SVL) and PGCC cable if deemed technically necessary. The design report shall be submitted to EGAT for approval.

1.11.8 Calculate the mechanical force due to short-circuit current as per IEC standard. Determine the specification for cable cleats. For the calculation of forces caused by short-circuit currents, the peak short circuit current of **100kA** shall be used. The design report shall be submitted to EGAT for approval.

1.11.9 Design, supply and installation the equipment to protect the power cable from the surge and over-voltage.

1.11.10 The abnormal condition which occurs from the design and installation of 115kV XLPE cables for example ferroresonance etc. shall be responsible by the Contractor.

1.11.11 Based on the design of 115kV XLPE cable system aforementioned, the contractor shall provide detailed drawings for the installation of this cable system including all related components.

1.11.12 The position and number of the cable cleats shall be calculated and determined by the contractorto withstand the electromechanical force from short circuit according to IEC standard.

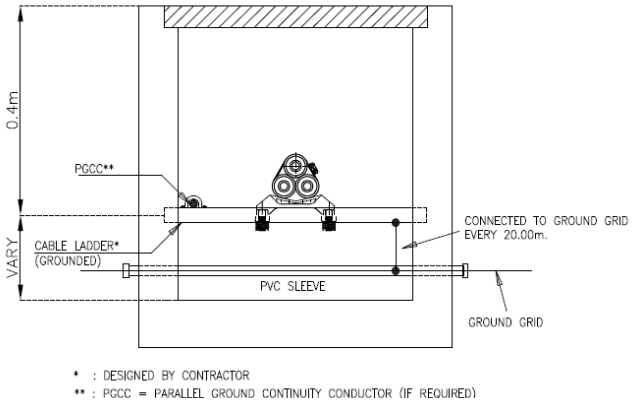
1.12 Design, supply and installation of 33kV XLPE cable system which comprises at least the following:

1.12.1 The design and calculation of the 33kV cable system shall conform to IECand/or IEEE standards.

1.12.2 The 33kV XLPE cable shall be single-core with copper conductor.

1.12.3 Design, supply and installation of the 33kV XLPE cables in a 33kV system complete from one end at the 33kV bus to the 33kV switchgear and 33kV switchgear to the disconnecting switch, including cable trench, cable supporting structures, cable spacers, cable cleats, cable terminationsupporting structures,cable terminations, miscellaneous hardware, link box, Sheath Voltage Limiter (SVL)(if applicable) and all related equipment, structures and hardware.

1.12.4 The 33kV XLPE cable shall be installed in **trefoil** formation.



The cable support structure shall be made of stainless steel, aluminum alloy or galvanized steel. The contractor shall design, supply and install the cable supporting structures that are suitable for cable cleats and cable system installation and their grounding. The ground shielding shall be directly connected to ground grid and shall not be connected with other equipment's grounding material before connecting to ground grid.

1.12.5 The minimum bending radius of the 33kV XLPE cable shall be checked bycontractor for cable installation and cable trench design.

1.12.6 The contractor shall design the 33kV cable system such that one (1) 1/C-500 Sq.mm. XLPE cable shall be able to carry the continuous current not less than **500A** given that the ambient temperature is not less than 45°C.The effect of solar radiation shall be considered if deemed technically necessary. The other parameters used in the design shall be practical, reasonable, operational and conform to IEC standard. The design report shall be submitted to EGAT for approval. The calculated continuous current rating shall be shown in the single-line diagram.

1.12.7 The contractor shall calculate the sheath induced voltage in accordance with IEEE standard. The sheath standing voltage at every point on the metallic sheath of 33kV XLPE cable system shall be less than **60V** under the rated continuous current. The cable jacket shall be properly designed to be protected from overvoltage. Determine the specification for a surge voltage limiter (SVL) and PGCC cable if deemed technically necessary. The design report shall be submitted to EGAT for approval.

1.12.8 Calculate the mechanical force due to short-circuit current as per IEC standard. Determine the specification for cable cleats. For the calculation of forces caused by short-circuit currents, the peak short circuit current of **62.5kA** shall be used. The design report shall be submitted to EGAT for approval.

1.12.9 Design, supply and installation the equipment to protect the power cable from the surge and over-voltage.

1.12.10 The abnormal condition which occurs from the design and installation of the 33kV XLPE cable system for example the ferroresonanceetc, shall be responsible for the contractor.

1.12.11 Based on the design of 33kV XLPE cable system aforementioned, the contractor shall provide detailed drawings for the installation of this cable system including all related components.

1.12.12 The position and number of the cable cleats shall be calculated and determined by the contractorto withstand the electromechanical force from short circuit according to IEC standard.

2. Station service system

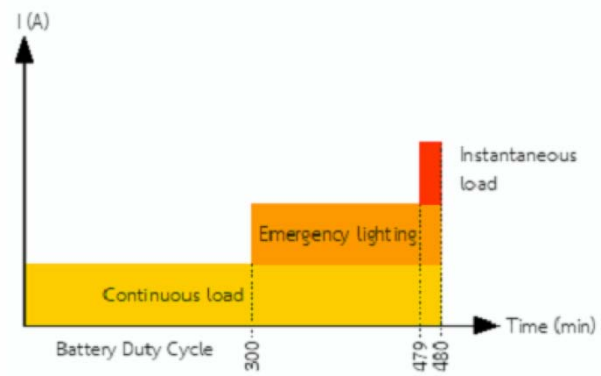
2.1 Design, supply and installation of station service system complete with integral accessories to provide a complete system operation. The station service system mainly consists of as follows:

- 300kVA, 33,000-400/230V distribution transformer (KW1A)
- 300kVA, 33,000-400/230V distribution transformer (KW2A)
- Load Center Unit Substation (LCUS)
- 33kV drop-out fuses
- 600V, 500A safety switches
- 33kV equipment, and AC&DC distribution boards, stationary batteries, battery chargers, power cables and all related equipment for the complete operation.

2.2 Design, supply and installation of equipment required for a complete 400/230Vpower supply system.

2.3 Design, supply and installation of the stationary battery, in which the battery is capable of delivering power to the control and protection for tripping all circuit breakers and emergency essential load for at least **8** hours if normal station service fails. The capacity of the battery shall be designed by the contractor which the considered factor the influence the capacity of battery shall be as follows:
- The temperature correction factor is 1.0
- The design margin factor is 1.15
- The aging factor is 1.25

In case of bus faults occurring on the last hour of battery power, the battery shall generate sufficient power for tripping all circuit breakers as shown in figure below. The stationary battery shall be designed and calculated in accordance with IEEE or other acceptable international standards. In addition, the size of the stationary battery shall be designed to support the operation of thenew 115kV GISand future diameter as shown on the attached bidding document drawings.The calculation shall be submitted to EGAT for approval.



2.4 Emergency lighting system shall be installed at the 115kV GIS building, control building and 33kV switchgear buildingin case of normal station service fails. The

said emergency lighting system is activated and capable of generating illumination level of at least **150 LUX** for at least 3 hours.

3. Grounding system

3.1 Design, supply and installation the grounding system of the following:

- 115kVGIS substation
- 115kV system
- 33kV system and the 33kV switchgear system
- 115kV GIS building
- Control building
- 33kV switchgear building

The grounding conductor of the substation grounding system shall be 4/0 AWG bare copper wire type.

3.2 The ground grid conductor spacing under the building area shall be the same as the switchyard.

3.3 Design, supply and installation of the grounding equipment and miscellaneous hardware for 115kV GIS substation, the 33kV system and the 33kV switchgear system including the 33kV power supply system and 115/33kV XLPE cable system.

3.4 Design, supply and installation of the grounding system of the isolating transformer. The grounding system of the isolating transformer shall be separated from that of the substation.

3.5 The contractor shall conduct the soil resistivity measurement. The result shall be submitted to EGAT for approval.

3.6 The contractor shall evaluate the price of new ground grid for the overall area of substation after filling soil based on the specified design for price reference as below:

3.6.1 The maximum ground grid conductor spacing (D_0) shall be **5** meters.

3.6.2 The number of ground rod shall be **160** pieces.

3.7 The contractor shall design a grounding grid based on the measured soil resistivity by hand calculation using the equations in IEEE-80 standard and submitted to EGAT for approval. The parameters for grounding system calculation shall be used as follows;

- Fault current division factor (s_f) value = **1**
- Fault current (rms) = **40 kA**
- Time duration of fault =**1 second**

These parameters shall be used for determine the size of grounding conductor for the substation grounding system. If the ground conductor spacing calculated by hand (D_1) is less than the grounding conductor spacing for reference (D_0), the contractor shall design a grounding grid by using the software. The certification of software shall be acceptable for commercial use.

4. Lightning protection system

4.1 Design, supply and installation of the substation lightning protection system complete with all related equipment. The contractor shall design the lightning protection system for the protection of all substation equipment which is under the protective zone. To meet EGAT's design criteria for the lightning protection

system and to enhance the stability of lightning protection system, the Basic Insulation Level voltage (BIL) of:

- 550kV for 115kV substation.

shall be used in calculation instead of Critical Flashover voltage (CFO).

For 33kV substation, the stroke current of **2kA** shall be used for the calculation.

4.2 For the design of lightning protection system for the 115kV GIS building, control building and 33kV switchgear building, the lightning protection level (LPL) shall be used level 1 for calculation and the overhead ground wire is not permitted. Air terminal rods installed at the roof shall be used instead.

4.3 Lightning protection system shall be designed to meet IEC, NEMA and E.I.T. standards or internationally-accepted standards.

5. Facility system

5.1 Outdoor facility system

5.1.1 Design, supply and installation of a substation lighting system complete with all integral accessories to provide a complete system operation.The lighting system shall mainly consist of equipment lighting, fence lighting, access road lighting, power box (PRB), sign board lighting, lighting relay panels (LRP), raceways and wiring cables for lighting circuits.

5.1.2 The lamps for outdoor facility lighting system shall be LED type with all integral accessories, e.g. lamp holders, fixtures, reflectors, and etc.The contractor shall provide drawings that show details for installation.

5.1.3 Design, supply and installation of circuits for remote control and door phone system of the entrance gate. The control of the entrance gate shall be operated in both manual and remote-control modes which shall be controlled from both the control room and the guardhouse.

5.2 Indoor facility system

5.2.1 Design, supply and installation of the facility system which mainly consists of lighting system, lightning protection system, grounding system, power supply, fire alarm and protection system, air conditioning system, ventilation system and telephone& LAN system in 115kV GIS building,control building and 33kV switchgear building. All cable wiring systems shall conform NEC and IEC standards or accepted international standards.

5.2.2 The lamps for indoor facility lighting system shall be LED type with all integral accessories, e.g. lamp holders, fixtures, reflectors, and etc. The contractor shall provide drawings that show details for installation and specify the LED lamp and LED luminaire circuit identified that the LED lamp circuit shall be supplied by 2 - 3 manufacturers.

5.2.3 All steel accessories e.g. lip-channel, conduit, conduit fittings, conduit accessories, box and cover shall be hot dip galvanized.

5.2.4 Inverter for emergency lighting shall meet the requirement as below table. Contractor shall responsible for inverter sizing calculation and the calculation shall be submitted to EGAT for approval.

No.	Description	Requirement data	Unit	No.	Description	Requirement data	Unit
1	Environmental Condition			6	Control button		
	1.1 Minimum ambient temperature	0	Celsius		6.1 Inverter START and STOP	YES	
	1.2 Maximum ambient temperature	40	Celsius		6.2 Acknowledge alarm silent	YES	
	1.3 Relative Humidity	0-95	%		6.3 Lamp test	YES	
	1.4 Tropicalization	YES	-				
	1.5 Altitude	<1000	meters	7	Measurement scale 90 degree		
					7.1 AC output voltage cls 1.5	YES	
2	Cabinet						
	2.1 Protection Level	IP 20		8	Protection		
	2.2 Mounting	Removable			8.1 Overload shutdown	YES	
	2.3 Epoxy painting color	RAL7032			8.2 Low DC voltage shutdown (<105 V)	YES	
	2.4 Convection ventilation	Forced air			8.3 AC output fuse to prevent short circuit current and overload	YES	
	2.5 Steel sheet thickness	1.5	mm.		8.4 Overload temperature shut down	YES	
					8.5 Thermistor fan controlled (Inverter will shut down when temperature exceed 70 Celsius)	YES	
3	Main supply Voltage						
	3.1 Nominal Voltage	125	V.		8.6 DC circuit breaker	YES	
	3.2 Voltage variation	100-150	V.		8.7 AC circuit breaker	YES	
	3.3 Permissible ripple voltage on DC	< 5	% Vp-p		8.8 DC input fuse to prevent short circuit current and overload	YES	
	3.4 Self-precharge	YES					
				9	Monitor		
4	Output AC Voltage				9.1 Input DC voltmeter	YES	
	4.1 Nominal voltage	220	V.		9.2 Output AC voltmeter	YES	
	4.2 Supply system	1 ph+N					
	4.3 Static voltage regulation at 0-100% load variation and power factor 1.0	+/- 2	%	10	Alarm and LED lamp status indicator		
	4.4 Dynamic voltage regulation -At AC input fluctuation +/- 10 %	+/- 5	%		10.1 Inverter ON/OFF	YES	
					10.2 DC input status	YES	
	4.5 harmonic distortion	< 5	% THD		10.3 Load on inverter	YES	
	4.6 Output frequency	50	Hz		10.4 LED lamp alarm indicators (Alarm noise shall not less than 75 db)	YES	
	4.7 Frequency variable	+/- 0.5	%		10.5 AC output status (LED shall blink when Under/Over voltage +/- 10 %)	YES	
	4.8 Synchronized frequency	+/- 1	% Hz				
5	Output capacity			11	Cable entry		
	5.1 Output continuous capacity	xx	kVA		11.1 DC incoming	YES	
	Note xx : Design by Contractor				11.2 AC Outgoing	YES	
	5.2 Overload capacity 100 % continuous	YES			11.3 Terminal	INSIDE	
	5.3 Overload capacity 125 %	10	min				
	5.4 Overload capacity 150 %	1	min				
	5.5 Efficiency at rated load and 1.0 power factor	> 85	%				

5.2.5 The size of low voltage cable shall be sufficient to keep the voltage drop at the load point less than **5%** at rated current.

5.2.6 The voltage drop shall conform to EGAT's requirement and the calculation shall be submitted for approval.

5.2.7 The contractor shall refer to DWG.No.TYP2A-CD-0-01L and TYP2A-CD-0-01M for guideline to design facility system of the control building.

5.2.8 The contractor shall refer to DWG.No.TYP2A-GIS-7-01L and TYP2A-GIS-7-01M for guideline to design facility system of the 115kV GIS building.

5.2.9 The contractor shall refer to DWG.No.SD-SWG-3-01L and SD-SWG-3-01M for guideline to design facility system of the 33kV Switchgear building.

6. Telecommunication system

6.1 The Contractor shall connect the new grounding system of substation to the grounding system of the existing telecommunication tower.

7. Grid-Connected Solar Photovoltaics (PV) Rooftop System

7.1 The Contractor shall design, supply, deliver, install, construct, test, commission and maintain the Grid-Connected Solar PV rooftop system, which shall be completed with all necessary accessories and minor items to facilitate the correct completion

of the work. All requirements of relevant standards over these works shall be applied. The **60 kWp** Solar on Grid system with string inverters shall be installed at the rooftop of GIS with control building or control building.All the Solar PV rooftop system should be metered and the energy generated from the PV rooftop system shall be recorded.

General Requirement

7.1.1 The grid-connected rooftop solar power system shall consist of the following equipment/components but not limited to:

- Photovoltaic modules (PV modules) with grid-connected rooftop solar power support structure
- Grid-connected inverter
- DC combiner box
- AC panel
- DC fuse or DC circuit breaker & AC circuit breaker
- DC & AC surge arrester
- DC & AC cable
- Conduit & Cable tray
- DC & AC connector
- Identification plate
- Monitor equipment
- Tools required for operation and maintenance
- Any other item(s) that may be required to successfully commission, operation and maintain the grid-connected solar PV rooftop system.

7.1.2 All equipment/components parts used in thegrid-connected solar PV rooftop system shall conform to the single line diagram and Technical Specifications of systems as shown in Dwg.No. SE-PV-0-01-01/01 & SE-PV-0-02-01/02 – 02/02 or internationally-accepted standards.

7.1.3 Submittals for documents, drawings, catalogs and manuals of equipment, warranty cards and spare parts shall conform to Technical Specifications of systems as shown in Dwg.No. SE-PV-0-02-01/02 – 02/02.

7.1.4 All documents and drawings shall be certified and signed by the Contractor’s authorized senior professional engineers certified by Thailand’s Council of Engineers.

7.1.5 The contractor or subcontractor shall have experience in executing at least two (2) contracts as the contractor for design and installation of Solar PV rooftop system in Thailand which has the capacity of PV system more than 60kWp, with successful operation of at least two (2) consecutive years.

7.1.6 Testing and commissioning of the grid-connected solar PV rooftop system shall conform to the internationally-accepted standards.

7.1.7 Mentoring and training to EGAT’s operating staff for operation and maintenance.

7.1.8 The insurance period for workmanship and Materials shall conform to Technical Specifications of systems as shown in SE-PV-0-02-01/02 – 02/02.

8. **Other work**

8.1 Supply and Installation of miscellaneous hardware required for suspension and post insulatorsassembly

8.2 Modification of junction box supporting structure (JB003) for the installation of common cubicle and outdoor receptacle box (ORB1 and ORB2).

8.3 Modification of junction box supporting structure (JB001) forthe installation of safety switch.

8.4 Modification of BS204 for installation of 33kV power fuses and distribution transformer.

8.5 Modification of BS202 for installation of 33kV disconnecting switchesand 33kV XLPE cables.

8.6 Modification of DP401 for installation of 33kV XLPE cables, 33kV surge arresters and 33kV disconnecting switches.

8.7 Design, supply and installation of cabling from the outdoor marshalling cubical (MC002) to the associated equipment.

8.8 Removal of the lamp posts, equipment, structures in the existing 115kV conventional substation.Details of removal are shown on the bidding document drawings. All removed equipment shall be carefully packed by the contractor and returned to EGAT atSongkhla substation.Songkhla substationis located at Phawong sub- district, Mueang district, Songkhla province.

8.9 Design, supply and installation of the new identification plates for 115kV capacitor bank and 33kV capacitor banks.

8.10 Supply and installation of cabling for control and protection system of the 115kV and 33kV capacitors.

8.11 Installation of heat shrinkable insulation material for 33kV aluminum conductor between 33kV drop-out fuses and distribution transformers.Installation of heat shrinkable insulation material for phase spacing distance less than 1.00 m. in 33kV system**.**

8.12 Supply and installation of the labels or signs for indication the low voltage underground cable routes in case of the low voltage cables installed by direct burial method or run in conduit method.

9. **Testing and commissioning**

9.1 Testing and commissioning of all equipment required to make the substation function properly.

<u>Work not included in this Contract.</u>

The Work not included in this contract shall be as shown on the drawings and as follows:

1. Supply and installation of 115-33-11kV power transformers “KT1A, KT2A”
2. The stringing work for the connection between the 115kVsubstationstake-off structures and the dead-end towers of the transmission lines.
3. Supply station post and suspension insulators.
4. Dismantlement, relocation and installation of 115kV capacitor banks.
5. Dismantlement, relocation and installation of 33kV capacitor banks.

CONTROL AND PROTECTION PART

Schedule 1: 115 kV PATTANI Substation

1. Work Included in This Contract for 115 kV PATTANI Substation

1.1 Design, supply, installation, wiring, test and commissioning of the complete control and protection system based on IEC 61850 standard which comprises at least the following equipment:

For Process Level
- Merging unit cubicle
- 400/230 VAC board, 125 VDC power panel and 125 VDC distribution board

For Bay Level
- Protective IED panel (swing-rack type)
- Bay Control Unit (BCU) panel (swing-rack type)
- Metering panel (swing-rack type)
  Each energy meter shall be calibrated by EGAT's Energy Meter Department before being installed in each metering panel.
- Ethernet switch panel for station bus (19" rack type)
- Ethernet switch panel for process bus (19" rack type)
- E1 converter panel (19" rack type)
- Fault Recording System (FRS) panel (19" rack type)
- 400/230 VAC board, 125 VDC power panel and 125 VDC distribution board

For Station Level
- GPS receiver and gateway panel (19" rack type)
- Outdoor antenna and accessories
- HMI and accessories
- Engineering workstation (EWS) and accessories
- Redundant UPS systems to power HMI and EWS
- Complete set of operator console and chair
- 400/230 VAC board, 125 VDC power panel and 125 VDC distribution board

For Loose Part
- Optical fiber cables, copper cables, patch cord cables and accessories
- EFLEX conduits for optical fiber cables outside buildings
  Outdoor optical fiber cables shall be wired in EFLEX conduits laying in cable trench as per drawing no. TP-E-20.13.
- Loose equipment as specified in price schedules.

1.2 Design, supply, installation, wiring, test and commissioning of the complete operator console, engineering workstation, HMIs, gateways, and all required system software and hardware in order to successfully run the IEC 61850 based substation protection and automation system.

1.3 The separated industrial desktop computers running on the latest licensed Microsoft Windows operating system with the licensed antivirus program shall be provided in order to be used as HMIs and engineering workstation. The EGAT SCADA X software which will be supplied by EGAT for local substation control and signal monitoring shall be installed in the HMIs by the System Integrator. Moreover, the EGAT gateway software which will be supplied by EGAT for remote substation control, gateway configuration, and interfacing to EGAT's SCADA system which at least consists of National Control Center (NCC), Backup National Control Center (BNCC), Regional Control Center (RCC), Backup Regional

Control Center (BRCC), Group Control Center (GCC), and Backup Group Control Center (BGCC) shall also be installed in the engineering workstation by the System Integrator. In addition, IEC 60870-5-104 is used for EGAT's SCADA system.

1.4 The System Integrator shall be responsible for at least the following scope of works:

- Design the complete IEC 61850 based substation protection and automation system as well as the communication network based on IEC 61850 standard in order to coordinate with the existing equipment and/or equipment supplied by EGAT.
- Configure each IED and communication network in order to completely fulfill the designed IEC 61850 based substation protection and automation system.
- Design the engineering workstation, HMIs, gateways, and all required system software including both EGAT SCADA X software and EGAT gateway software installation in order to successfully run the IEC 61850 based substation protection and automation system. In addition, the signal lists to be displayed/controlled via engineering workstation, HMIs and the EGAT's SCADA system shall be discussed with EGAT after the Award of Contract.
- Perform at least the following tests:
  - Individual test
    This test is to verify each IED performance which shall comply with EGAT's Specifications as well as the relevant drawings and documents. In addition, the internal logic of each IED shall be adapted according to EGAT's comments in case the IED performance does not fulfill EGAT's requirements.
  - Service setting test
    This test is to verify the response of all protection related functions with the calculated parameters setting implementation for all IEDs. The calculation report using the given data which will be provided after the Award of Contract shall be done by the System Integrator and submitted to EGAT for approval before configuring to all IEDs.
  - Factory Acceptance Test (FAT)
    This test is to verify system performance with configured IEDs which shall comply with EGAT's Specifications as well as the relevant drawings and documents.
  - Site Acceptance Test (SAT)
    This test is to finally verify the complete IEC 61850 based substation protection and automation system with the existing equipment and/or equipment supplied by EGAT at site which the system performance shall comply with EGAT's Specifications as well as the relevant drawings and documents. In addition, the test will be under EGAT's supervision.

  All test reports shall at least clearly show the following details:
  - Test procedures
  - All used data such as parameters, standards, and etc.
  - Test results
  - Conclusion.

  In addition, all tests shall be witnessed by EGAT's staff. Moreover, EGAT shall have access to all necessary data for complete understanding of the tests as well as the validity of the results.

1.5 The Contractor shall be responsible for providing both hardcopies and electronic files of the complete schematic and wiring diagrams of the IEC 61850 based substation protection and automation system including programmable logic schemes of each IED, programmable logic schemes of parallel transformer (if any), HMI graphic display, SSD files, ICD files, SCD files, CID files, signal lists of SV, GOOSE and MMS, and communication network connection diagram. Moreover, the required software for the above-said SCL files configuration shall also be supplied. In case of the SCD file configuration, the supplied

software shall be compatible with all IEDs operated in the substation and shall also support multi-vendor IEDs. In addition, the Contractor can use the substation system network topology on drawing no. TP-E-20.3 as a guideline. The said drawing can be modified by the Contractor. However, it shall be submitted to EGAT for approval.

1.6 The Contractor shall be responsible for providing both hardcopies and ACAD files of the complete schematic and wiring diagrams of the interfacing work between IEC 61850 based substation protection and automation system and the existing equipment and/or equipment supplied by EGAT. In addition, the approved final revision of green-red drawings and final drawings shall be printed and submitted in A1 paper size.

1.7 The Contractor shall provide the draftsman working at the site during the commissioning stage in order to be in charge of writing the as-built drawings of control and protection system.

2. Work Not Included in This Contract for 115 kV PATTANI Substation

2.1 Supply of EGAT SCADA X software and EGAT gateway software.

COMMUNICATION PART

Schedule 1: 115 kV PATTANI Substation

Work included in this Contract.

CCTV system

1. Design, supply, and installation of the substation CCTV system which complies with the following qualifications:
   - 1.1 The system can be operated 24 hours a day.
   - 1.2 All cameras in the system shall be IP-camera type.
   - 1.3 At least 2 monitoring locations are required, the guardhouse and the control room.
   - 1.4 Installation space in the control room shall be prepared for rack cabinet(s) and CCTV operation desk(s) positions.
   - 1.5 In case of outdoor installation, all devices shall be weather-proof type which can be operated in all outdoor weather conditions, robust and durable.
   - 1.6 The bidder or a subcontractor shall be authorized by a representative or a branch office of manufacturer in Thailand.
   - 1.7 The bidder or a subcontractor shall be able to supply the spare parts of CCTV equipment in this contract for at least five (5) years starting from the date of EGAT acceptance.
   - 1.8 The calculation and required drawing according to the attached Bidding Document Specification shall be submitted to EGAT for approval.

CIVIL AND ARCHITECTURAL PART

Schedule 1: 115 kV PATTANI Substation

Work included in this Contract.

1. Design and construction of
   1.1 115 kV GIS Building.
      1.1.1 Structure &foundation. The proper structure can be selected for the design and construction and shall be submitted to EGAT for approval.
      1.1.2 RC and/or steel structure for roof.
      1.1.3 Fire protection for steel structure shall conform to legal provision, EGAT's specifications and Design manual for substation.
      1.1.4 Architecture of the whole building.
      1.1.5 The contractor shall construct the building in accordance with "IEEE STD-979-1994 (R2004)" (IEEE Guide for Substation Fire Protection).
      1.1.6 115 kV GIS Building shall be designed with reference to Standard 115 kV GIS Building (Dwg.No.SD-GIS-7-02A) Equipment layouts and cable block out shall conform to electrical drawingDwg.no.SE-GIS-0-01-01/01 and Dwg.No.PTN-S-2 andDwg.No.PTN-S-6. Other facilities layouts shall conform to requirements with reference to architectural drawings and scope of work.
      1.1.7 The design of building shall analyze and take the following aspects into consideration: Site, Environment, Context, Function, Climate (sunlight, wind, rain, heat etc.), Energy efficiency, Safety and including aesthetic of architecture to encourage EGAT corporate identity.
      1.1.8 For exterior surface of the building, there shall be at least 20% of total building area which uses yellow color that represents corporate image of EGAT.
      1.1.9 GIB Block out of the building shall be filled with fire stop material-mortar or sealant or foam with 2 hr. fire resistance rate and install in accordance to the manufacturer's instruction.
      1.1.10 Building facilities
         - Electricity and illumination system including cable work for illumination, ventilation system, power supply, air conditioning system, and telephone system.
         - Strom water drainage system.
         - Miscellaneous including grounding and labeling.
         - Cable routing and cable support (cable tray and cable ladder) installed in cable room and main cable trench.
         - Overhead traveling crane, of lifting capacity not less than 5 metric tons and wireless crane remote control. Overhead traveling crane shall have cat-walk for maintenance the equipment on ceiling and complete with 2 sides of guard rail along the cat-walk.

- Overhead traveling crane shall comply with standard DIN EN 15011 standard.
- Overhead traveling crane motors shall be dual speed or inverter and have operation speed as below.

Operating speed	High speed	Low speed
Cross travel	20 m/min	5 m/min
Long travel	32 m/min	5 m/min
Lifting	5 m/min	0.8 m/min

- Overhead traveling crane shall be inspected and maintained for 2 years, not less than 4 times per year and not less than manufacturers' recommendation.
- Life line shall be installed above along runway rail of overhead traveling crane.
- Signboard on building.
- Lightning protection system.
- Emergency lighting system.
- Warning sign provided in accordance with EIT Standard or Quality and Safety Development Division Standard (EGAT).

1.2 115 kV Control Building.

1.2.1 Structure &foundation. The proper structure can be selected for the design and construction and shall be submitted to EGAT for approval.

1.2.2 RC and/or steel structure for roof.

1.2.3 Fire protection for steel structure shall conform to legal provision, EGAT's specifications and Design manual for substation.

1.2.4 Architecture of the whole building.

1.2.5 The contractor shall construct the building in accordance with "IEEE STD-979-1994 (R2004)" (IEEE Guide for Substation Fire Protection).

1.2.6 115kV Control Building shall be designed with reference to Standard drawing(Dwg.No.SD-CD-0-02A.)but size of building ,equipment layouts and cable block out shall conform to electrical drawing Dwg.No.PTN-S-2 and Dwg.No.PTN-S-6. Other facilities layouts shall conform to requirements with reference to architectural drawings and scope of work.

1.2.7 The design of building shall analyze and take the following aspects into consideration: Site, Environment, Context, Function, Climate (sunlight, wind, rain, heat etc.), Energy efficiency, Safety and including aesthetic of architecture to encourage EGAT corporate identity.

1.2.8 For exterior surface of the building, there shall be at least 20% of total building area which uses yellow color that represents corporate image of EGAT.

1.2.9 Building facilities

- Electricity and illumination system including cable work for illumination, ventilation system, power supply, air conditioning system, and telephone system.

- Plumbing system for water supply, building drain and vent, storm water drainage including sanitary wares and fittings.
- Miscellaneous including grounding and labeling.
- Cable routing and cable support (cable tray and cable ladder) installed in cable room and main cable trench.
- Furniture as specified in architectural Drawings.
- Signboard on building and room name sign on each room.
- Lightning protection system.
- Emergency lighting system.
- Warning sign provided in accordance with EIT Standard or Quality and Safety Development Division Standard (EGAT).
- The access floor system material in the Specification No.3001 (Civil and Architectural work) No.3001-10.8.3.5 Access Floor System (Raised Flooring System) shall be cancelled

2. Construction of

2.1 33 kV Switchgear Building.

- Fire protection for steel structure shall conform to legal provision, EGAT's specifications and Design manual for substation.

WATER SUPPLY AND FIRE PROTECTION SYSTEM

1. Design and construction of

1.1 Fire protection system for 115 kV GIS Building.

1.1.1 GIS Building shall consist of optical beam smoke detector and linear heat detector.

1.1.2 Fire protection system of GIS Building shall have trouble and operation visual and audible signals (environmental monitoring), which indicate change of state of any connected device, shown and recorded at control room in 115 kV Control Building. The installation practice shall be in accordance with the last edition of NFPA 72.

1.1.3 There shall be sounder and beacon on the roof of the building.

1.1.4 For air sampling smoke detector as shown on specification 3001- 10.13.2 part i item no.1, 7, 13 and 14 shall be changed to the new details as followings :

i. Air Sampling Smoke Detector.

(1) Shall consist of a high sensitivity type detector, using light scatter technology.

(7) Detection system for all cabinet shall be omitted.

(13)The minimum sensitivity settings for a single sampling hole are so that the detection system alarm at 1.5%obs/ft(4.95%obs/m).A sampling hole maximum coverage area is 400.0 sq.ft (37.2 sq.m).

(14) Maximum transport time from the most remote port to the detection unit of an air-sampling system shall be a maximum of 90 seconds.

1.1.5 Fire protection system, fire alarm system and accessories shall be in accordance with the applicable requirements set forth in the latest edition of the following codes and standards:

- NFPA 70 : National Electrical Code.
- NFPA 72 : National Fire Alarm Code.
- NFPA 75 : Standard for the Fire Protection of Information Technology Equipment.
- NFPA 76 : Standard for the Fire Protection of Telecommunications Facilities.
- IEEE Std 979: IEEE Guide for Substation Fire Protection
- NFPA 850 : Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Substations

1.2 Fire protection system for 115 kV Control Building.

1.2.1 Control Building shall consist of Total Flood Clean Agent Fire Suppression System with heat detector, addressable type smoke detector and aspirated smoke detector.

1.2.2 Fire protection system of Control Building shall have trouble and operation visual and audible signals (environmental monitoring), which indicate change of state of any connected device, shown and recorded at control room in 115 kV Control Building. The installation practice shall be in accordance with the last edition of NFPA 72.

1.2.3 There shall be sounder and beacon on the roof of the building.

1.2.4 For system requirements for indoor fire protection system as shown on specification 3001-10.13.1 part e, item no.1 and 6 shall be changed to the new details as follow

(1) System description and operation : Supply and Installation of a Total Flood Clean Agent Fire Suppression System utilizing IG-100 shall cover all these zones :

Zone 1: Equipment (Control/Relay) Room ;
Zone 2: Electrical Room ;
Zone 3: Under Raised Floor (If Required);
Zone 4: Battery Room ;
Zone 5: Cable Room (If required) ;
Zone 6: Inert Gas Room
Other zone (If required)

Each protected zone shall have its own set of IG-100 cylinders.

(6) Detectors shallbecross-zoneddetectionrequiring2 detectors to be in alarm before discharge. A zone of A or B of addressable smoke detector and a zone C of all ASD shall be crossed.

1.2.5 For air sampling smoke detector as shown on specification 3001- 10.13.2 part i item no.1, 7, 13 and 14 shall be changed to the new details as followings :

i. Air Sampling Smoke Detector.

(1) Shall consist of a high sensitivity type detector, using light scatter technology.

(7) Detection system for all cabinet shall be omitted.

(13) The minimum sensitivity settings for a single sampling hole are so that the detection system alarm at 1.5%obs/ft(4.95%obs/m).A sampling hole maximum coverage area is 400.0 sq.ft (37.2 sq.m).

(14) Maximum transport time from the most remote port to the detection unit of an air-sampling system shall be a maximum of 90 seconds.

1.2.6 Fire protection system, fire alarm system, installation room and accessories shall be in accordance with the applicable requirements set forth in the latest edition of the following codes and standards:

- NFPA 2001: Clean Agent Fire Extinguishing Systems.
- NFPA 70 : National Electrical Code.
- NFPA 72 : National Fire Alarm Code.
- NFPA 75 : Standard for the Fire Protection of Information Technology Equipment.
- NFPA76 : Standard for the Fire Protection of Telecommunications Facilities.
- IEEE Std 979: IEEE Guide for Substation Fire Protection
- NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Substations.

1.2.7 There shall be one control panel which controls fire detection system and IG-100 fire suppression system in the building.

1.2.8 There shall be a protective clear polycarbonate cover which can be immediately lifted or opened for all IG-100 manual release stations.

1.2.9 Battery room shall be furnished with an all-stainless steel, wall-Mounted emergency eyewash. Contractor shall submit the catalog and proposed location of the eyewash to EGAT for approval.

1.3 Fire protection system for 22/33 kV Switchgear Building.

1.3.1 Switchgear Building shall consist of Total Flood Clean Agent Fire Suppression System with addressable type smoke detector and aspirated smoke detector.

1.3.2 Fire protection system of Switchgear Building shall have trouble and operation visual and audible signals (environmental monitoring), which indicate change of state of any connected device, shown and recorded at control room in 115 kV Control Building. The installation practice shall be in accordance with the last edition of NFPA 72.

1.3.3 There shall be sounder and beacon on the roof of the building.

1.3.4 For system requirements for indoor fire protection system as shown on specification 3001-10.13.1 part e, item 6 shall be changed to the new details as follow

(6) Detectors shall be cross-zoned detection requiring 2 detectors to be in alarm before discharge. A zone of A or B of addressable smoke detector and a zone C of all ASD shall be crossed.

1.3.5 For air sampling smoke detector as shown on specification 3001- 10.13.2 part i item no.1, 7, 13 and 14 shall be changed to the new details as followings :

i. Air Sampling Smoke Detector.

(1) Shall consist of a high sensitivity type detector, using light scatter technology.

(7) Detection system for all cabinet shall be omitted.

(13) The minimum sensitivity settings for a single sampling hole are so that the detection system alarm at 1.5%obs/ft(4.95%obs/m).A sampling hole maximum coverage area is 400.0 sq.ft(37.2 sq.m).

(14) Maximum transport time from the most remote port to the detection unit of an air-sampling system shall be a maximum of 90 seconds.

1.3.6 Fire protection system, fire alarm system, installation room and accessories shall be in accordance with the applicable requirements set forth in the latest edition of the following codes and standards:

- NFPA 2001: Clean Agent Fire Extinguishing Systems
- NFPA 70 : National Electrical Code.
- NFPA 72 : National Fire Alarm Code.
- NFPA 75 : Standard for the Fire Protection of Information Technology Equipment.
- NFPA 76 : Standard for the Fire Protection of Telecommunications Facilities.
- IEEE Std 979: IEEE Guide for Substation Fire Protection
- NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Substations

1.3.7 There shall be a protective clear polycarbonate cover which can be immediately lifted or opened for all IG-100 manual release stations.

1.4 Fire protection system for the switchyard to meet the requirement as specified in IEEE Guide for Substation Fire Protection: IEEE Std 979, all requirements of NFPA 850.

1.5 Fire Pump System. (conforming to NFPA 14, 20, 22, 24, 72).

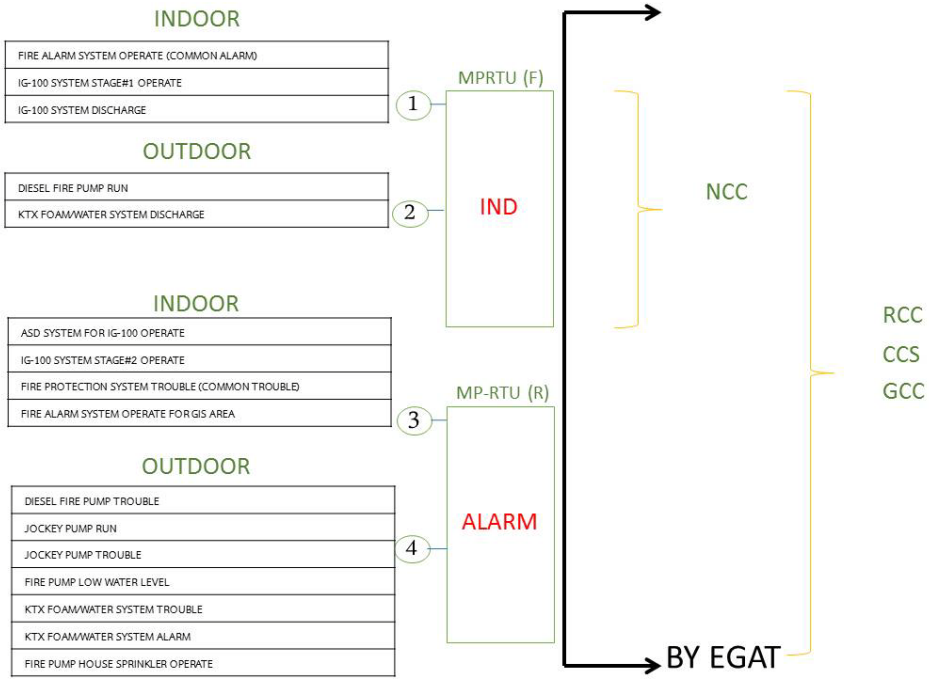
1.6 250 cu.m water storage tank, fire pump, and jockey pump shall have trouble and operation visual and audible signals (environmental monitoring), which indicate change of state of any connected devices, shown and recorded at control room in 115 kV Control Building. The installation practice shall be in accordance with the latest edition of NFPA 72.

1.7 There shall be one fire alarm system graphic annunciator at each building to enable responding personnel to identify the location of a fire accurately and to indicate the status of emergency equipment or fire safety functions.

1.8 There shall be one graphic annunciator which displays alarm, discharge and trouble signals of fire alarm system of other buildings, (fire pump houses, transformers, shunt reactors) at the building where control room locates.

1.9 Fire protection system circuits for buildings and switchyards : notification appliance circuits , and signaling line circuits , shall be class A circuit. Initiating device circuits can be class B circuit.

1.10 For fire protection system monitoring system, contractor shall be responsible for procuring and installing a system comprising of monitoring and automatic alarm equipment; and for connecting the system to EGAT SCADA using Protocol Modbus or other Protocols that EGAT supports via TCP/IP port RJ45. When detectors detect smoke or heat, or equipment abnormality occurs, or fire protection system operates, the monitoring system will send alarm signals and record the even location, event date, start time, end time, and other necessary information. The event log must be appropriate for analyzing the cause of the event. The signals shall be verificable and sent through (CCS) RTU and EGAT SCADA to NCC (National Control Center). The equipment shall be installed in control building or other location specified by EGAT. Signals of indoor fire protection system of each room and signals of outdoor fire protection system of each transformer / shunt reactor shall be sent to local CCS, GCC, RCC, and NCC as following details;



1.11 There shall be only one subcontractor engaging in design, supply and installation of Fire Protection System for Buildings and Switchyard.

1.12 Water supply system.

1.13 Deep well and water treatment system.

1.14 All building wall openings for fire protection dampers shall be provided with stainless steel louvers and insect screens to install inside of building.

1.15 For portable fire extinguisher as shown on specification 3001- 10.13.3 shall be changed to the new details as followings :

- The fire extinguishers shall be conformed to latest TIS standards. The portable and mobile fire extinguishers shall be carbon dioxide (CO_2) conforming to TIS 881 and/or dry chemical conforming to TIS 332 , capacity 10 lbs/set. The fitting accessories shall be provided.
- The portable fire extinguishers shall be installed according to the latest NFPA 10.

1.16 There shall be safety signs for fire extinguisher, manual release station and fire alarm device.

1.17 Contractor shall warranty the fire protection system for one full year starting the date after contract final completion. Fire protection system shall be inspected and maintained for 2 years, not less than 4 times per year and not less than manufacturers' recommendation, at contractor's cost and expense.

1.18 Notwithstanding the expiration of any warranty period described in this contract, the warranty period for any fire protection system or equipment and maintenance period shall be extended by a period equal to the sum of any periods during the warranty period when such system or equipment cannot be used for the purposes for which they were intended or the delays in maintenance, starting from the date EGAT has given contractor notice.

1.19 There shall be a set of computer desk with chair, a set of CPU which suitable for fire protection system software and operate 24 hours a day and a set of 24" LED monitor which show the status of fire protection system in control room in 115 kV Control Building. One set of laser jet printer shall be provided.

1.20 Consumable materials for fire protection system, for example, filters, liquids, and seals shall be provided according to manufacturer's instructions for a period of two years.

1.21 For all buildings, piping or cable penetrating the wall/floor and block out at wall/floor shall be enclosed with fire stop material. Fire stop material shall be approved by UL Listed/FM Approved and comply with NFPA 80 (Standard for Fire Doors and Other Opening Protectives) and other relevant standards. The installer shall be certified by manufacturer and have experience in installation of material for at least 5 years, of at least 10 projects.

1.22 Fire detection devices in substation shall be as table below.

Protected Area	Detector
1. Control, Relay and Telecommunication Rooms, Thyristor valve room	ASD and SD
2. Under-Raised Floor	ASD and SD
3. Feeder Sections and Switchgear areas	ASD and SD
4. Electrical Room	ASD and SD
5. Battery room	
5.1 Battery room Vented Type	HD
5.2 Battery room Dry Type	HD
6. GIS Area	OBSD
7. Inert Gas Room	SD
8. Other Room such as Shops, Office, Warehouse and Pantry	HD or SD
9. Emergency Diesel generator room or Emergency	HD

Generator Set House	
10. Transformer, Shunt Reactor	LHD
11.Cable Spreading Rooms and Cable Tunnels	▪ SD when environmental condition is acceptable. ▪ LHD when environmental condition is out of range for SD ▪ ASD in high risk area and required early response.
12. Main Cable Trench of GIS Area	LHD

Abbreviations

1. Heat detector, HD
2. Addressable Spot-Type Photoelectric Smoke detector, SD
3. Linear Heat Detector, LHD
4. Aspirated smoke detectors, ASD
5. Optical beam smoke detector, OBSD

1.23 Pipe coating system shall conform to ASME A13.1 standard and ANSI-A13.1

1.24 Underground water supply and fire protection piping shall have indicator sign.

1.25 For Fire protection system design shall be conformed to NFPA 101 (Life Safety Code).

1.26 All junction boxes or electrical equipment in rooms on ground floor shall be 1.2 m higher from room floor elevation.

1.27 All firestops for penetrations shall be pre-formed block firestop / pillow firestop / sleeve firestop / pathway firestop, being able to be removed and reinstalled conveniently. Foam and sealant firestops shall not be used.

1.28 Water treatment house shall be concrete slab, wire mesh fence with metal sheet roof.

2. Construction of
   - 2.1 Fire pump house.
   - 2.2 Cabinets with 2X50lbs wheel fire extinguisher.
   - 2.3 Water storage tank for fire protection system (capacity not less than 250 cu.m).
   - 2.4 Underground water tank 50cu.m.
   - 2.5 Water tank tower15cu.m.

CIVIL WORK

1. Design and construction of
   - 1.1 Steel structure and foundations for Specified equipment and the others not shown in “For Construction drawings” and / or EGAT’s specification.
     - 1.1.1 115 kV GIB & GIS bushing structure and foundation.

1.1.2 115 kV Terminator support foundation.
1.1.3 33 kV Dead-end structure foundation.
1.1.4 115 kV Circuit breaker structure foundation.
1.1.5 115 kV Disconnecting switch support structure foundation.
1.1.6 115 kV Current transformer structure foundation.

1.2 Road and drainage system.
1.3 Drainage system for cable trench.
1.4 Sizing of Oil containing pit (value of L, B, W, W1 and W2).
1.5 Sizing of Oil separator (value of A and D).
1.6 Remote control (shall be controlled from either the control room or the guard house) and door phone system for main entrance gate.
1.7 Cable trench for XLPE system with RC cover.
1.8 Cable trench for XLPE system with steel cover.
1.9 Modification lamp post on concrete fence.
1.10 Retaining wall.
1.11 RC covering steel post and bracing of existing telecommunication.
1.12 RC covering opening between ground floor and 1st floor of existing control building.
1.13 Concrete pole strain bus structure.
1.14 Site office.
1.15 33 kV Switchgear Building.
- Modify structure of CDU area as per Architectural drawing.

2. Construction of
2.1 Site preparation.
2.2 Steel structure foundation.
2.3 Equipment structure foundation with sub trench (if required).
2.4 Transformer foundation.
2.5 Transformer loading.
2.6 Cable trench.
2.7 RC. Road.
2.8 Oil separator.
2.9 Oil containing pit with steel grating and black steel spiral-seam pipes (TIS 427-latest edition) with protection method according to AWWA C205, C217.
2.10 Crushed rock surfacing.
2.11 Wire mesh fence.
2.12 Concrete fence.
2.13 Main entrance gate 8.00 m width (sliding).
2.14 Switchyard entrance gate width (sliding).
2.15 Switchyard entrance gate.
2.16 Signboard structure and foundation.
2.17 Guard house.
2.18 Garage house.
2.19 Flag pole.
2.20 Lamp post for fence and access road lighting LED type foundation.

3. The Contractor shall remove existing structure with reference to Dwg.no. PTN-C-1, PTN-C-2, PTN-C-3, PTN-C-6 and PTN-C-9.
4. The drawings and calculation of all buildings shall be verified with adequate details for intended application and submitted to EGAT for approval.
5. All design works and the fabrication drawings for all steel structures shall be submitted to EGAT for approval.
6. All design, construction and testing shall be in accordance with Specification No.3001: Civil and Architectural Work.
7. EGAT's Soil Investigation Report (attached to the Contract) is a document that can be a reference for design, however; the review of the soil investigation report shall be under responsibility of the Contractor and the warranty of work shall remain following all obligations as specified in the Contract.
8. All foundations shall be as specified in layout drawing. Except the result of soil investigation shows that the specified foundations are not appropriate, the Contractor shall design the proposed foundations.
9. The Contract price shall be adjusted (added or reduced) in case that the soil investigation results to be used for the design works is different from the layout and standard drawings.
10. The Contractor shall perform a static load test for 115kV GIS Building and 115kV Control Building foundations in accordance with ASTM D1143-latest edition.
11. Dynamic load test (DLT) according to ASTM D4945-latest edition shall be applied to at least 2% of driven piles (if driven pile type is required) except for driven pile of fence and lamp post.
12. Seismic load test (sonic integrity test) according to ASTM D5882-latest edition shall be applied to all bored piles (if bored pile type is required).
13. Plate bearing test according to ASTM D1194-latest edition shall be submitted to EGAT for approval. (if pad type foundation is required).
14. The Contractor shall remove all debris from construction material and other works in order to make the site clean and be in the condition acceptable to EGAT.
15. According to the Contract Document Section G-3:Contractor's Office and Other Construction Facilities; the detail in paragraph 3 shall be changed as follows:The Contractor shall provide for EGAT an office container at the site during construction with a minimum space of 36 sq.m for office area, 24 sq.m for conference room which shall both be air-conditioned and 4 sq.m for toilet. The facilities as shown on the section G-3 are required for 2 sets.

SOLAR ROOFTOP SYSTEM

1. Design and construction of
    1.1 The solar rooftop system for 115 kV Control Building
        1.1.1 The materials and equipment for solar rooftop system installation shall meet electrical criteria and standard qualifications in order to safely and properly install the system in buildings by professional installer.
        1.1.2 The Contractor shall design safe access for routine inspection and maintenance and there shall be accessible paths between solar cell arrays for operators to safely and conveniently work.
        1.1.3 The steel structure materials shall be hot dip galvanizing by following ASTM standard.

1.1.4 The tools of construction shall be both properly assembled and disassembled.

1.1.5 The equipment or mounting of the PV solar module attached to the construction shall be in proper size and shall be made from stainless steel or corrosion–prevented materials whose grade is not below 304 stainless steel or AL6005-T5 or equivalent.

1.1.6 The system installation shall provide strong, stable and proper mounting for the roof profile and provide a solid mount that does not penetrate the roof surface.

1.1.7 The PV module support structure shall be strongly, durably and securely fastened to the roof structure. All structural parts shall be designed for wind resistance not less than the maximum wind speed of tropical storm, and seismic (Earthquake) load requirement according to official declaration of Meteorology Department or regulations relevant to the area, if any.

1.1.8 Water supply system with cable and conduit for cleaning solar roof top of the building shall have automatic pump with pressure tank and PE water tank at ground floor. The automatic pump with pressure tank shall have sufficient capacity and delivery head. The Contractor shall submit water supply design calculation to EGAT for approval.

Work not included in this Contract.

1. Supply of spare grass and weed killer and accessories. (Specification 3001-4.2.4)

CONTROL AND PROTECTION PART

Schedule 2: 115 kV HAT YAI 2 Substation

1. Work Included in This Contract for 115 kV HAT YAI 2 Substation

1.1 Supply loose part as specified in price schedule

2. Work Not Included in This Contract for 115 kV HAT YAI 2 Substation

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CONTROL AND PROTECTION PART

Schedule 3: 115 kV Yala 1 Substation

1. Work Included in This Contract for 115 kV Yala 1 Substation

1.1 Supply loose part as specified in price schedule

2. Work Not Included in This Contract for 115 kV Yala 1 Substation

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