

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 กิจการร่วมค่านั้นต้องเป็นผู้ที่ได้รับใบอนุญาตประกอบวิชาชีพวิศวกรรมควบคุมสำหรับนิติบุคคลจากสภาวิศวกร
 - (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 เพื่อให้เป็นไปตามพระราชบัญญัติคุ้มครองข้อมูลส่วนบุคคลของประเทศไทย 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



การขิดฆ่าข้อมูลส่วนบุคคลอ่อนไหว

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 ขอให้ท่านขิดฆ่า หรือปกปิดข้อมูลดังกล่าว ก่อนส่งมอบให้แก่ กฟผ.

Notice to Bidder

Subject : Online Payment for Purchase of Bidding Documents

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

- 1) Fill-out the Registration Form and the proof of payment in the link provided in <https://www4.egat.co.th/fprocurement/biddingeng>

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.

- 2) The registration will be deemed complete only upon successful processing of the payment and confirmation of funds received.
- 3) 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.



Invitation to Bid No. HSIS-S-03

Supply and Construction of 115 kV Sungai Kolok Substation (GIS), Improvement of 115 kV Yala 2 and 115 kV Narathiwat Substations High Voltage Substation Improvement in the Southern Area for Terrorism and Flood Protection

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 : Sungai Kolok Substation (GIS), Yala 2 Substation and Narathiwat Substation

Medium Cost (including Value Added Tax and other expenses) : THB 694,000,000.-

Eligibility of Bidders

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

Availability of Bidding Documents

Bidding Documents are available for online purchase during 8:00 hrs. to 15:00 hrs., Bangkok Standard Time, as from November 7, 2025 to December 4, 2025 at USD 270.- or THB 8,000.- per copy, non-refundable.

Please find more details for online purchasing process at <https://www4.egat.co.th/fprocurement/biddingeng> or contact for further information at telephone no. 66 2436 3342 or procurement.tse@egat.co.th.

Delivery of Bids

Bids shall be submitted at Bidding Room, 1st Floor, Tor 137 Building at EGAT's Head Office, Nonthaburi during 9:00 hrs. to 10:00 hrs., Bangkok Standard Time, February 3, 2026 and will be opened publicly at 10:00 hrs.

ELECTRICITY GENERATING AUTHORITY OF THAILAND

November 7, 2025

Kannika Dhachalupat

(Mrs. Kannika Dhachalupat)

Chief, Procurement Department – Transmission System Segment



ประกาศการไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เรื่อง ประกวดราคาจ้าง เลขที่ HSIS-S-03

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย (กฟผ.) มีความประสงค์จะจัดซื้อและจ้างก่อสร้างสถานีไฟฟ้าแรงสูง 115 kV สู่โคง-ลก (GIS) และจัดซื้อและจ้างก่อสร้างปรับปรุงสถานีไฟฟ้าแรงสูง 115 kV ยะลา 2 และสถานีไฟฟ้าแรงสูง 115 kV นราธิวาส สำหรับแผนงานปรับปรุงสถานีไฟฟ้าแรงสูงในพื้นที่ภาคใต้ เพื่อป้องกันการเกิดวินาศกรรมและอุทกภัย โดยทำสัญญาแบบปรับราคาได้ (ค่า k) โดยใช้งบประมาณ กฟผ.

สถานที่ก่อสร้าง : สถานีไฟฟ้าแรงสูงสู่โคง-ลก (GIS) สถานีไฟฟ้าแรงสูงยะลา 2 และสถานีไฟฟ้าแรงสูงนราธิวาส
ราคากลาง (รวมภาษีมูลค่าเพิ่มและค่าใช้จ่ายอื่นๆ) : 694,000,000.- บาท

คุณสมบัติของผู้เสนอราคา

1. ต้องเป็นนิติบุคคลผู้มีอาชีพรับจ้างตามประกวดราคาจ้างดังกล่าว และต้องไม่เป็นผู้ทำงานซึ่งปลัดกระทรวงการคลังได้แจ้งเวียนชื่อไว้ หรือต้องไม่เป็นผู้ที่ กฟผ. ห้ามติดต่อหรือห้ามเข้าเสนอราคา หรือต้องไม่เป็นผู้ที่ได้รับผลของการสั่งให้นิติบุคคลหรือบุคคลอื่นเป็นผู้ทำงานตามคำสั่ง กฟผ.
2. ต้องเป็นผู้มีผลประโยชน์ร่วมกันกับผู้เสนอราคารายอื่น ณ วันประกาศประกวดราคาครั้งนี้เป็นต้นไป หรือต้องไม่เป็นผู้กระทำการอันเป็นการขัดขวางการแข่งขันราคาอย่างเป็นธรรมในการดำเนินการประกวดราคาครั้งนี้
3. ต้องไม่เป็นที่ปรึกษาของ กฟผ. หรือมีส่วนร่วมในบริษัทที่ปรึกษาของ กฟผ. ในงานนี้ หรือต้องไม่มีผู้ปฏิบัติงาน กฟผ. เข้าไปมีส่วนร่วมในกิจการของผู้เสนอราคา ไม่ว่าจะในฐานะผู้ถือหุ้นที่มีสิทธิควบคุมการจัดการ กรรมการ ผู้อำนวยการ ผู้จัดการ พนักงาน ลูกจ้าง ตัวแทน หรือที่ปรึกษา ยกเว้น ในกรณีที่ผู้ปฏิบัติงานได้รับคำสั่งอย่างเป็นทางการจาก กฟผ. ให้ไปปฏิบัติงานหรือเข้าร่วมในกิจการของผู้เสนอราคา
4. ต้องไม่เป็นผู้ได้รับเอกสิทธิ์หรือความคุ้มกัน ซึ่งอาจปฏิเสธไม่ยอมขึ้นศาลไทย เว้นแต่รัฐบาลของผู้เสนอราคาได้มีคำสั่งให้สละสิทธิ์และความคุ้มกันเช่นนั้น
5. ผู้ประสงค์เข้าประกวดราคาในนามของกิจการร่วมค้าหรือกิจการร่วม (Joint Venture or Consortium) จะต้องดำเนินการทุกขั้นตอนของการประกวดราคา ในนามของกิจการร่วมค้าหรือกิจการร่วม ตั้งแต่การเสนอราคาจนถึงสิ้นสุดข้อผูกพันกับ กฟผ.

การขายเอกสารประกวดราคา

ผู้สนใจติดต่อซื้อเอกสารประกวดราคา ในราคาชุดละ 8,000.- บาท ในวันทำการระหว่างเวลา 08:00 น. ถึง 15:00 น. ตั้งแต่วันที่ 7 พฤศจิกายน 2568 ถึงวันที่ 4 ธันวาคม 2568 ทั้งนี้ สามารถดูรายละเอียดการซื้อเอกสารประกวดราคาได้ที่เว็บไซต์ <https://www4.egat.co.th/fprocurement/biddingeng> หรือสอบถามข้อมูลเพิ่มเติมได้ทางโทรศัพท์ หมายเลข 0 2436 3342 หรืออีเมล procurement.tse@egat.co.th

การยื่นซองประกวดราคา

กำหนดยื่นซองประกวดราคา ในวันที่ 3 กุมภาพันธ์ 2569 เวลา 09:00 น. ถึง 10:00 น. และเปิดซองประกวดราคา เวลา 10:00 น. ณ ห้องประกวดราคา ชั้น 1 อาคาร ท.137 การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เซิงสะพานพระราม 7 จังหวัดนนทบุรี

ประกาศ ณ วันที่ 7 พฤศจิกายน 2568

กมลทิศา ธนกุลัญญ์

(นางกรรณิกา ธชาลกุลัญญ์)

หัวหน้ากองจัดซื้อจัดจ้างสายงานระบบส่ง

**ตารางแสดงวงเงินงบประมาณที่ได้รับจัดสรรและราคากลาง(ราคาอ้างอิง)
ในการจัดซื้อจัดจ้างที่มีใช้งานก่อสร้าง**

1. ชื่อโครงการ Bid No. HSIS-S-03

การจัดซื้อและจ้างก่อสร้างสถานีไฟฟ้าแรงสูง 115 kV สุโขทัย-ลพบุรี (GIS) และจัดซื้อและจ้างก่อสร้างปรับปรุงสถานีไฟฟ้าแรงสูง 115 kV ยะลา 2 และสถานีไฟฟ้าแรงสูง 115 kV นราธิวาส แผนงานปรับปรุงสถานีไฟฟ้าแรงสูงในพื้นที่ภาคใต้ เพื่อป้องกันการเกิดวินาศกรรมและอุทกภัย /หน่วยงานเจ้าของโครงการ ฝ่ายแผนงานและโครงการระบบส่ง การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย

2. วงเงินงบประมาณที่ได้รับจัดสรร

แผนงานปรับปรุงสถานีไฟฟ้าแรงสูงในพื้นที่ภาคใต้ เพื่อป้องกันการเกิดวินาศกรรมและอุทกภัย งบประมาณ 4,960 ล้านบาท

3. วันที่กำหนดราคากลาง 20 สิงหาคม 2568 (วันที่ ชรว. อนุมัติ)

ราคารวมภาษีมูลค่าเพิ่มและค่าใช้จ่ายอื่นๆ เป็นเงิน 694,000,000.00 บาท ราคา/หน่วย ตามเอกสารแนบ

4. แหล่งที่มาของราคากลาง

หลักเกณฑ์การกำหนดราคากลางการจัดซื้อและจัดจ้างงานก่อสร้างระบบส่งไฟฟ้าของสายงานพัฒนาระบบส่ง

5. รายชื่อเจ้าหน้าที่ผู้กำหนดราคากลาง

5.1 นายณัฐ	วงศ์เทพวานิชย์	หมฟ-ร. กวอ-ร.
5.2 นายภูภัทร	พานทอง	ทสก-ร. กวอ-ร.
5.3 นายภาณุวัฒน์	ลิขิตผลผดุง	ทวอ-ร. กวอ-ร.
5.4 นางสาวจรรุวรรณ	พิพัฒน์มงคลพร	ทอต-ร. กวอ-ร.
5.5 นายรุหาญ	รุจิธัญธาร	กวป-ร.
5.6 นายมณฑิธร	จำปาอ่อน	กวธ-ร.
5.7 นายสมประสงค์	พัฒนคุณเจริญกิจ	กวส-ส. อรส.

หมายเหตุ ค่าใช้จ่ายอื่นๆ ได้แก่ ค่าใช้จ่ายที่ กฟผ. ต้องจ่ายตามวิธีการพิจารณาเปรียบเทียบราคาที่กำหนดไว้ในเอกสารประกวดราคา เช่น อกรขาเข้า เป็นต้น

MEDIUM COST FOR BID NO. HSIS-S-03

SUMMARY OF BID PRICE

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK SUBSTATION (GIS), IMPROVEMENT OF 115 KV YALA 2 AND 115 KV NARATHIWAT SUBSTATIONS

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

Schedule	Description	Currency	Supply of Equipment		Local Currency (excluding VAT) Baht	Local Transportation (excluding VAT) Baht	Local Transportation, Construction and Installation (excluding VAT) Baht
			Foreign Supply	Local Supply			
			CIF Thai Port	Ex-works Price (excluding VAT) Baht			
			Amount	Amount			
1	115 KV SUNGAI KOLOK SUBSTATION (GIS)	THB	191,821,003.80				
				161,250,331.52	129,017,519.87	190,992.07	151,382,239.46
2	115 KV YALA 2 SUBSTATION						
				6,792,940.00			1,831,210.08
3	115 KV NARATHIWAT SUBSTATION	THB	625,490.80				
				996,006.30			1,077,579.96
BID PRICE		THB	192,446,494.60	Baht 169,039,277.82	Baht 129,017,519.87	Baht 190,992.07	Baht 154,291,029.50
OTHER EXPENSES		THB	3,848,929.89				
VAT			13,740,679.71	Baht 11,832,749.45	Baht 9,031,226.39	Baht 13,369.44	Baht 10,800,372.07
SUMMARY OF BID PRICE		THB	210,036,104.20	Baht 180,872,027.27	Baht 138,048,746.26	Baht 204,361.51	Baht 165,091,401.57
TOTAL MEDIUM COST		THB	694,252,640.81				
TOTAL MEDIUM COST (ROUNDED)		THB	694,000,000.00				

Signature

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MEDIUM COST FOR BID NO. HSIS-S-03
SCHEDULE 1 : 115 KV SUNGAI KOLOK SUBSTATION (GIS)
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK SUBSTATION (GIS)
HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Currency (excluding VAT) Baht Amount	Local Transportation (excluding VAT) Baht Amount	Local Transportation, Construction and Installation (excluding VAT) Baht Amount
		Foreign Supply	Local Supply			
		CIF Thai Port	Ex-works Price (excluding VAT) Baht			
		Amount	Amount			
PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT	THB	189,124,260.30	149,451,182.72			151,382,239.46
PART 1C : CIVIL WORK				129,017,519.87		
PART 1D : SUPPLY OF SPARE PARTS	THB	2,696,743.50	11,799,148.80		190,992.07	
TOTAL PRICE	THB	191,821,003.80	Baht	Baht	Baht	Baht
			161,250,331.52	129,017,519.87	190,992.07	151,382,239.46


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MEDIUM COST FOR BID NO. HSIS-S-03

PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	
Schedule 1AB1 : Power Transformer and Marshalling Control Cubicle			172,000.00	77,400.00
Schedule 1AB2 : Distribution Transformer			2,194,000.00	987,300.00
Schedule 1AB4 : Surge Arrester	THB	2,364,000.00	492,000.00	1,285,200.00
Schedule 1AB7 : SF6 Gas Insulated Switchgear	THB	144,246,704.00		64,911,016.80

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MEDIUM COST FOR BID NO. HSIS-S-03

PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	
Schedule 1AB10 : Disconnecting Switch	THB	2,771,535.80	69,645.00	1,278,531.36
Schedule 1AB11 : Power Fuse, Fuse Link and Hook Stick	THB	1,728,276.00		777,724.20
Schedule 1AB12 : AC&DC Distribution Board and Termination Box			2,757,913.32	1,241,060.99
Schedule 1AB13 : Stationary Battery and Battery Charger	THB	1,106,003.80	1,462,247.60	1,155,713.13



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PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	
Schedule 1AB14 : Substation Steel Structure			3,950,787.00	3,111,244.76
Schedule 1AB15 : Insulator				315,748.13
Schedule 1AB16 : Cable Terminations	THB	22,955,685.00	970,952.00	18,842,226.64
Schedule 1AB17 : XLPE Power Cable			23,418,450.00	18,442,029.38



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PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	
Schedule 1AB18 : Low Voltage Cable and Conductor			15,374,266.60	12,107,234.95
Schedule 1AB19 : Switchyard Lighting Fixtures			1,407,494.00	1,108,401.53
Schedule 1AB20 : Aluminum Tube, Connector and Miscellaneous Hardware			346,591.30	272,940.65
Schedule 1AB21 : Bus Fitting	THB	623,192.90		490,764.41

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MEDIUM COST FOR BID NO. HSIS-S-03

PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	
Schedule 1AB22 : Grounding Material	THB	479,882.70	704,700.70	932,859.43
Schedule 1AB23 : Substation Miscellaneous	THB	111,662.10	340,405.20	356,003.00
Schedule 1AB24 : Control and Protection System			88,752,114.00	15,476,443.00
Schedule 1AB25 : Fault Recording System			3,326,262.00	572,983.00

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MEDIUM COST FOR BID NO. HSIS-S-03

PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	
Schedule 1AB33 : CCTV			2,252,394.00	404,371.00
Schedule 1AB34 : 48 VDC Stationary Battery, Battery Charger and DC Power			1,090,000.00	110,000.00
Schedule 1AB35 : Communication Cable			368,960.00	654,500.00
Schedule 1AB37 : Medium Voltage Switchgear	THB	12,737,318.00		5,731,793.10



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MEDIUM COST FOR BID NO. HSIS-S-03

PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	
Schedule 1AB39 : Commissioning				640,000.00
Schedule 1AB40 : Installation of Equipment and Steel Structure Supplied by EGAT				98,750.00
PART 1AB	THB	189,124,260.30	Baht	Baht
			149,451,182.72	151,382,239.46


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MEDIUM COST FOR BID NO. HSIS-S-03

PART 1C : CIVIL WORK

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	7,604,952.00
Schedule 1C2 : Cable Trench	12,070,966.00
Schedule 1C3 : Building	72,486,625.87
Schedule 1C4 : Earth Work, Road and Crushed Rock Surfacing	2,024,831.00
Schedule 1C5 : Water Supply System	2,843,177.00
Schedule 1C6 : Drainage System	5,669,221.00
Schedule 1C7 : Special Construction Works	7,235,797.00
Schedule 1C9 : Fire Protection System	19,081,950.00
PART 1C	Baht 129,017,519.87



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MEDIUM COST FOR BID NO. HSIS-S-03

PART 1D : SUPPLY OF SPARE PARTS

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK SUBSTATION (GIS)

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

Description	Currency	Supply of Equipment		Local Transportation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 1D7 : Spare Parts for SF6 Gas Insulated Switchgear	THB	1,541,700.60		77,085.03
Schedule 1D11 : Spare Parts for Power Fuse, Fuse Link and Hook Stick	THB	450,721.70		22,536.09
Schedule 1D12 : Spare Parts for AC&DC Distribution Board and Termination Box			63,577.80	3,178.89
Schedule 1D22 : Spare Parts for Grounding Material	THB	531,784.00		26,589.20

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MEDIUM COST FOR BID NO. HSIS-S-03

PART 1D : SUPPLY OF SPARE PARTS

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK SUBSTATION (GIS)

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

Description	Currency	Supply of Equipment		Local Transportation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 1D24 : Spare Parts for Control and Protection System			10,844,235.00	41,641.00
Schedule 1D25 : Spare Parts for Fault Recording System			891,336.00	11,335.00
Schedule 1D37 : Spare Parts for Medium Voltage Switchgear	THB	172,537.20		8,626.86
PART 1D	THB	2,696,743.50	Baht 11,799,148.80	Baht 190,992.07

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MEDIUM COST FOR BID NO. HSIS-S-03
SCHEDULE 2 : 115 KV YALA 2 SUBSTATION
SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 2 SUBSTATION
HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Currency (excluding VAT) Baht Amount	Local Transportation (excluding VAT) Baht Amount	Local Transportation, Construction and Installation (excluding VAT) Baht Amount
		Foreign Supply	Local Supply			
		CIF Thai Port	Ex-works Price (excluding VAT) Baht			
		Amount	Amount			
PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT			6,792,940.00			1,831,210.08
TOTAL PRICE			Baht 6,792,940.00	Baht	Baht	Baht 1,831,210.08


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PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 2 SUBSTATION
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	
Schedule 2AB18 : Low Voltage Cable and Conductor			1,112,463.00	584,043.08
Schedule 2AB24 : Control and Protection System			3,150,931.00	556,916.00
Schedule 2AB25 : Fault Recording System			2,529,546.00	472,251.00


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MEDIUM COST FOR BID NO. HSIS-S-03
PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 2 SUBSTATION
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	
Schedule 2AB38 : Remote Terminal Unit				33,000.00
Schedule 2AB39 : Commissioning				185,000.00
PART 2AB			Baht 6,792,940.00	Baht 1,831,210.08


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MEDIUM COST FOR BID NO. HSIS-S-03
SCHEDULE 3 : 115 KV NARATHIWAT SUBSTATION
SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
HIGH VOLTAGE SUBSTATION IMPROVEMENT IN THE SOUTHERN AREA FOR TERRORISM AND FLOOD PROTECTION

Description	Currency	Supply of Equipment		Local Currency (excluding VAT) Baht Amount	Local Transportation (excluding VAT) Baht Amount	Local Transportation, Construction and Installation (excluding VAT) Baht Amount
		Foreign Supply	Local Supply			
		CIF Thai Port	Ex-works Price (excluding VAT) Baht			
		Amount	Amount			
PART 3AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT	THB	625,490.80	996,006.30			1,077,579.96
TOTAL PRICE	THB	625,490.80	Baht 996,006.30	Baht	Baht	Baht 1,077,579.96


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MEDIUM COST FOR BID NO. HSIS-S-03
PART 3AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
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	
Schedule 3AB5 : Current Transformer and Junction Box	THB	594,000.00	83,000.00	304,650.00
Schedule 3AB15 : Insulator				2,915.80
Schedule 3AB18 : Low Voltage Cable and Conductor			210,183.60	165,519.59
Schedule 3AB20 : Aluminum Tube, Connector and Miscellaneous Hardware			10,866.90	8,557.68


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PART 3AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
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	
Schedule 3AB21 : Bus Fitting	THB	27,722.20		21,831.23
Schedule 3AB22 : Grounding Material	THB	693.00	24,041.60	19,478.50
Schedule 3AB23 : Substation Miscellaneous	THB	3,075.60	10,699.20	10,847.66
Schedule 3AB24 : Control and Protection System			657,215.00	260,029.50

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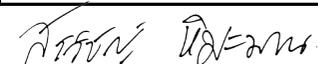
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PART 3AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION

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	
Schedule 3AB38 : Remote Terminal Unit				30,000.00
Schedule 3AB39 : Commissioning				185,000.00
Schedule 3AB40 : Installation of Equipment and Steel Structure Supplied by EGAT				68,750.00
PART 3AB	THB	625,490.80	Baht	Baht
			996,006.30	1,077,579.96



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB1 : Power Transformer and Marshalling Control Cubicle

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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					86,000.00	172,000.00	XXXXX	XXXXX		
1AB1-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB1-1	Lumpsum	Lumpsum		XXXXX	XXXXX	XXXXX	XXXXX	77,400.00	77,400.00		
Total Price for Schedule 1AB1								Baht	Baht	172,000.00	77,400.00	



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB2 : Distribution Transformer

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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						840,000.00	1,680,000.00	XXXXX	XXXXX	
1AB2-2	150 kVA, 400-400/230V distribution transformer, oil immersed, outdoor type as per Ratings and Features RF DX0404	1						514,000.00	514,000.00	XXXXX	XXXXX	
1AB2-3	Cost of Local Transportation, Construction and Installation for Item No. 1AB2-1 thru 1AB2-2											
		Lumpsum	Lumpsum		XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	987,300.00	987,300.00	
Total Price for Schedule 1AB2									Baht	2,194,000.00	Baht	987,300.00



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB4 : Surge Arrester

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB4-1	108 kV Surge Arrester as per Ratings and Features RF SA7Y11	12		THB	102,000.00	1,224,000.00			XXXXX	XXXXX		
1AB4-2	30 kV Surge Arrester as per Ratings and Features RF SA3Y11	12		THB	95,000.00	1,140,000.00			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	12					41,000.00	492,000.00	XXXXX	XXXXX		
1AB4-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB4-1 thru 1AB4-3		Lumpsum		XXXXX	XXXXX	XXXXX	XXXXX	1,285,200.00	1,285,200.00		
				THB	2,364,000.00		Baht		Baht			
Total Price for Schedule 1AB4							492,000.00		1,285,200.00			



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
					CIF Thai Port							
					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) As per Dwg No. SUK-S-1-01/03, SUK-S-1-02/03 (line to SPP)	1		THB	20,606,672.00	20,606,672.00			XXXXXX	XXXXXX		
1AB7-2	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) As per Dwg No. SUK-S-1-01/03, SUK-S-1-02/03 (line to NARATHIWAT)	1		THB	20,606,672.00	20,606,672.00			XXXXXX	XXXXXX		
1AB7-3	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC)As per Dwg No. SUK-S-1-01/03, SUK-S-1-02/03 (line to Power Transformer (KT2A))	1		THB	20,606,672.00	20,606,672.00			XXXXXX	XXXXXX		
1AB7-4	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) As per Dwg No. SUK-S-1-01/03, SUK-S-1-02/03 (bus coupling bay)	1		THB	20,606,672.00	20,606,672.00			XXXXXX	XXXXXX		



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	Unit Price	Amount				
1AB7-5	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) As per Dwg No. SUK-S-1-01/03, SUK-S-1-02/03 (line to YALA 2)	1		THB	20,606,672.00	20,606,672.00			XXXXXX	XXXXXX		
1AB7-6	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC)As per Dwg No. SUK-S-1-01/03, SUK-S-1-02/03 (line to Power Transformer (KT1A))	1		THB	20,606,672.00	20,606,672.00			XXXXXX	XXXXXX		
1AB7-7	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC)As per Dwg No. SUK-S-1-01/03, SUK-S-1-02/03 (line to future 115 kV C-Bank)	1		THB	20,606,672.00	20,606,672.00			XXXXXX	XXXXXX		
1AB7-8	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) (Metal Enclosed Bus with Gas Buffer Compartments) Including VTs and HSGSs at Main Bus As per Dwg No. SUK-S-1-01/03 and SUK-S-1-02/03 <i>ศิริพงษ์ นิธิพนม</i>	1	lot	THB	included	included			XXXXXX	XXXXXX		

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		Unit Price	Amount	Unit Price	Amount
					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) (Cable termination interface Plug-in type as per DWG. No. SUK-S-1-01/03 and SUK-S-1-02/03)	1	lot	THB	included	included			XXXXX	XXXXX		
1AB7-10	123 kV 3150/2000 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7540(IEC) (Female cable termination interface (Plug-in type) and Female cable termination interface (Plug-in type) with end-cover cap for future feeder** shall be provided) as per DWG. No. SUK-S-1-01/03 and SUK-S-1-02/03)	1	lot	THB	included	included			XXXXX	XXXXX		
1AB7-11	Local control cubicle for IS7540 for item no. 1AB7-1 thru 1AB7-10*	7		THB	included	included			XXXXX	XXXXX		
1AB7-12	Steel Supporting Structure for IS7540*	1	lot	THB	included	included			XXXXX	XXXXX		
1AB7-13	Removable service platform and removable ladder for GIS inspection*	1	lot	THB	included	included			XXXXX	XXXXX		



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		(excluding VAT) Baht	
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB7-14	Cost of Local Transportation, Construction and Installation for Item No. 1AB7-1 thru 1AB7-13		Lumpsum		XXXXX	XXXXX	XXXXX	XXXXX	64,911,016.80	64,911,016.80		
	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 EGAT.											
Total Price for Schedule 1AB7				THB	144,246,704.00		Baht		Baht 64,911,016.80			

*The design of these equipment/devices shall be verified by Gas Insulated Switchgear manufacturer

** Item 1AB7-10 (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. H SIS-S-03

1AB10 : Disconnecting Switch

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					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)	1		THB	613,800.00	613,800.00			XXXXXX	XXXXXX		
1AB10-2	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	1					69,645.00	69,645.00	XXXXXX	XXXXXX		
1AB10-3	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)	2		THB	246,077.70	492,155.40			XXXXXX	XXXXXX		
1AB10-4	38 kV 1250 A 20 kA air switch 1 pole vertical break hook operated as per Ratings and Features RF DS35E1 (Phase spacing = 1.00 m)	6		THB	82,025.90	492,155.40			XXXXXX	XXXXXX		
1AB10-5	38 kV 1600 A 20 kA air switch vertical break motor operated as per Ratings and Features RF DS36C1(IEC) (phase spacing = 1.00 m., H = 5.25 m. from base plate to top terminal)	2		THB	586,712.50	1,173,425.00			XXXXXX	XXXXXX		
1AB10-6	Cost of Local Transportation, Construction and Installation for Item No. 1AB10-1 thru 1AB10-5	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	1,278,531.36	1,278,531.36		
Total Price for Schedule 1AB10				THB	2,771,535.80		Baht		Baht			
							69,645.00		1,278,531.36			
												

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB11 : Power Fuse, Fuse Link and Hook Stick

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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	215,954.20	1,295,725.20			XXXXX	XXXXX		
1AB11-2	Fuse link or refill unit 7E for 33 kV power fuse (standard speed)	6		THB	72,091.80	432,550.80			XXXXX	XXXXX		
1AB11-3	Cost of Local Transportation, Construction and Installation for Item No. 1AB11-1 thru 1AB11-2	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	777,724.20	777,724.20		
				THB	1,728,276.00		Baht		Baht			
Total Price for Schedule 1AB11									777,724.20			

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MEDIUM COST FOR BID NO. HSI-S-03
1AB12 : AC&DC Distribution Board and Termination Box
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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)	1					975,964.00	975,964.00	XXXXXX	XXXXXX		
1AB12-2	Lighting Relay Panel (LRP) as per Dwg. No. LT-RP-0-03	1					111,958.00	111,958.00	XXXXXX	XXXXXX		
1AB12-3	Safety switch 600 Vac 500 A, 4 wire, S/N, 3 blades, 3 fuses time lag type, outdoor enclosure (Galvannealed steel or painted stainless steel, IP43, at least 2 mm thickness) 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					282,585.01	565,170.02	XXXXXX	XXXXXX		
1AB12-4	Termination Box type TB1 as per Dwg No. LT-TB-0-01	8					2,800.60	22,404.80	XXXXXX	XXXXXX		
1AB12-5	Outdoor Receptacle Box type ORB1 as per Dwg. No. SE-ORB-0-01	1					25,234.00	25,234.00	XXXXXX	XXXXXX		


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MEDIUM COST FOR BID NO. HSI-S-03
1AB12 : AC&DC Distribution Board and Termination Box
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB12-6	Common cubicle for maintenance type 1 as per Dwg. No. SE-CCM-0-01	1					72,726.50	72,726.50	XXXXX	XXXXX		
1AB12-7	400/230 Vac Distribution Board as per Dwg. No. TP-E-4.4 (For GIS, designed by Contractor)	1					225,717.80	225,717.80	XXXXX	XXXXX		
1AB12-8	400/230 Vac Distribution Board as per Dwg. No. TP-E-4.4 (For Electrical room, designed by Contractor)	1					225,717.80	225,717.80	XXXXX	XXXXX		
1AB12-9	125 Vdc Power Panel as per Dwg. No. TP-E-4.4 (For Electrical room)	1					187,092.40	187,092.40	XXXXX	XXXXX		
1AB12-10	125 Vdc Distribution Board as per Dwg. No. TP-E-4.4 (For GIS, designed by Contractor)	1					172,964.00	172,964.00	XXXXX	XXXXX		
1AB12-11	125 Vdc Distribution Board as per Dwg. No. TP-E-4.4 (For Electrical room, designed by Contractor)	1					172,964.00	172,964.00	XXXXX	XXXXX		
1AB12-12	Cost of Local Transportation, Construction and Installation for Item No. 1AB12-1 thru 1AB12-11	Lump sum	Lump sum			XXXXX	XXXXX	XXXXX	XXXXX	1,241,060.99	1,241,060.99	
Total Price for Schedule 1AB12							Baht 2,757,913.32		Baht 1,241,060.99			

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB13 : Stationary Battery and Battery Charger

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht					
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
					CIF Thai Port									
					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	1,017,925.70	1,017,925.70			XXXXX	XXXXX				
1AB13-1b	b) Electrolyte	1	set	THB	29,895.80	29,895.80			XXXXX	XXXXX				
1AB13-1c	c) Battery Rack	1	set	THB	58,182.30	58,182.30			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					731,123.80	1,462,247.60	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	1,155,713.13	1,155,713.13				
Total Price for Schedule 1AB13				THB	1,106,003.80		Baht		1,462,247.60		Baht	1,155,713.13		
														

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB14 : Substation Steel Structure

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (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	Unit Price	Amount				
1AB14-1	115 kV take-off structure (TS701) as per Dwg. No. ST-TS-7-01	8					129,329.00	1,034,632.00	XXXXX	XXXXX		
1AB14-2	115 kV take-off structure (TS702) as per Dwg. No. ST-TS-7-02	4					171,696.00	686,784.00	XXXXX	XXXXX		
1AB14-3	115 kV beam (BB701) as per Dwg. No. ST-BB-7-01	4					51,286.00	205,144.00	XXXXX	XXXXX		
1AB14-4	115 kV beam (BB702) as per Dwg. No. ST-BB-7-02	2					56,191.00	112,382.00	XXXXX	XXXXX		
1AB14-5	115 kV beam (BB703) as per Dwg. No. ST-BB-7-03	2					59,759.00	119,518.00	XXXXX	XXXXX		
1AB14-6	115 kV bus support structure (BS701) as per Dwg. No. ST-BS-7-01	4					40,137.00	160,548.00	XXXXX	XXXXX		
1AB14-7	22 kV bus support structure (BS202) as per Dwg. No. ST-BS-2-02 (For 33 kV)	4					52,624.00	210,496.00	XXXXX	XXXXX		
1AB14-8	22 kV bus support structure (BS204) as per Dwg. No. ST-BS-2-04 (For 33 kV)	2					60,651.00	121,302.00	XXXXX	XXXXX		
1AB14-9	22/33 kV deadend structure to PEA (DP401) as per Dwg. No. SD-DP-4-01 (For 33 kV)	2					221,198.00	442,396.00	XXXXX	XXXXX		

(Signature)
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MEDIUM COST FOR BID NO. HSIS-S-03

1AB14 : Substation Steel Structure

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB14-10	Disconnecting switch operating platform (OP002) as per Dwg. No. ST-OP-0-02	5						11,149.00	55,745.00	XXXXX	XXXXX	
1AB14-11	Junction box support structure (JB001) as per Dwg. No. ST-JB-0-01 (For Safety Switch)	2						9,811.00	19,622.00	XXXXX	XXXXX	
1AB14-12	Junction box support structure (JB003) as per Dwg. No. ST-JB-0-03 (For ORB1 and CCM type 1)	2						7,581.00	15,162.00	XXXXX	XXXXX	
1AB14-13	Telecommunication Tower as per Dwg. No. ST-TT-0-01 (H = 40.00 m) (Designed by contractor)	1						767,056.00	767,056.00	XXXXX	XXXXX	
1AB14-14	Cost of Local Transportation, Construction and Installation for Item No. 1AB14-1 thru 1AB14-13	Lump sum	Lump sum					XXXXX	XXXXX	XXXXX	XXXXX	
Total Price for Schedule 1AB14										Baht	Baht	
										3,950,787.00	3,111,244.76	



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB15 : Insulator

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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	XXXXXX	XXXXXX		
1AB15-2	115 kV station post insulator ANSI TR. No. 286 as per Specification attached	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXXX	XXXXXX		
1AB15-3	33 kV station post insulator ANSI TR. No. 210 as per Specification attached	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXXX	XXXXXX		
1AB15-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB15-1 thru 1AB15-3	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	315,748.13	315,748.13		
Total Price for Schedule 1AB15								Baht		315,748.13		

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB16 : Cable Terminations

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (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	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	24		THB	438,056.30	10,513,351.20			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	24		THB	357,084.20	8,570,020.80			XXXXX	XXXXX		
1AB16-3	Steel supporting structure for 115 kV cable terminations for item no.1AB16-2, 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 m, phase spacing shall be 2.25 m., 3-phase set, see Dwg. No. SUK-S-7 (01/02) (TA701), SUK-S-3, SUK-S-4 (01/02) for reference (Designed by Contractor)*	8					121,369.00	970,952.00	XXXXX	XXXXX		
1AB16-4	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	13,377.10	401,313.00			XXXXX	XXXXX		
1AB16-5	Cable Cleats with necessary miscellaneous hardware for item no. 1AB17-1, flat formation 1-phase set (Design by Contractor) as per RF no. TNAC1											
		Lump sum	Lump sum	THB	2,274,930.00	2,274,930.00			XXXXX	XXXXX		

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB16 : Cable Terminations

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB16-6	Cable Cleats with necessary miscellaneous hardware for item no. 1AB17-2, trefoil formation 3-phase set (Design by Contractor) as per RF no. TNAC1	Lump sum	Lump sum	THB	1,083,750.00	1,083,750.00			XXXXX	XXXXX		
1AB16-7	Cable Cleats with necessary miscellaneous hardware for item no. 1AB17-2, flat formation 1-phase set (Design by Contractor) as per RF no. TNAC1	Lump sum	Lump sum	THB	112,320.00	112,320.00			XXXXX	XXXXX		
1AB16-8	Cost of Local Transportation, Construction and Installation for Item No.1AB16-1 thru 1AB16-7	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	18,842,226.64	18,842,226.64		
	Note : Steel supporting structure for 115 kV cable termination for 1/C 800 sq.mm. XLPE power cable (Item No. 1AB16-3) shall be designed, considering prevention of any electrical and magnetic issues such as Eddy current.											
Total Price for Schedule 1AB16				THB	22,955,685.00		Baht		970,952.00		18,842,226.64	
												

* 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-03

1AB17 : XLPE Power Cable

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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				13,001,890.00	13,001,890.00	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				10,416,560.00	10,416,560.00	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	18,442,029.38	18,442,029.38		
Total Price for Schedule 1AB17								Baht 23,418,450.00	Baht 18,442,029.38			



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MEDIUM COST FOR BID NO. Hsis-S-03

1AB18 : Low Voltage Cable and Conductor

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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				5,973,682.00	5,973,682.00	XXXXX	XXXXX		
1AB18-2	600 V control cable with PVC insulation as per Specification attached	Lump sum	Lump sum				1,680,338.00	1,680,338.00	XXXXX	XXXXX		
1AB18-3	750 V lighting cable (THW) as per Specification attached	Lump sum	Lump sum				30,305.00	30,305.00	XXXXX	XXXXX		
1AB18-4	750 V lighting cable (NYY) as per Specification attached	Lump sum	Lump sum				1,161,435.00	1,161,435.00	XXXXX	XXXXX		
1AB18-5	Annealed copper ground wire as per Specification attached	Lump sum	Lump sum				6,284,703.70	6,284,703.70	XXXXX	XXXXX		
1AB18-6	Aluminum conductor as per Specification attached	Lump sum	Lump sum				197,739.30	197,739.30	XXXXX	XXXXX		
1AB18-7	Overhead ground wire as per Specification attached	Lump sum	Lump sum				46,063.60	46,063.60	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	12,107,234.95	12,107,234.95	
Total Price for Schedule 1AB18							Baht 15,374,266.60		Baht 12,107,234.95			


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MEDIUM COST FOR BID NO. HSI-S-03

1AB19 : Switchyard Lighting Fixtures

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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	14					18,686.80	261,615.20	XXXXX	XXXXX		
1AB19-2	Street lighting fixture, LED lamp, 5000 lumen, wide beam, complete with control gear as per Specification attached	30					10,586.40	317,592.00	XXXXX	XXXXX		
1AB19-3	Street lighting fixture, LED lamp, 5000 lumen, wide beam, complete with control gear as per Specification attached (Modify on the existing lamp post)	17					10,586.40	179,968.80	XXXXX	XXXXX		
1AB19-4	Tapered galvanized steel lamp post H=5000 mm. complete with 2 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	30					21,610.60	648,318.00	XXXXX	XXXXX		
1AB19-5	Cost of Local Transportation, Construction and Installation for Item No. 1AB19-1 thru 1AB19-4	Lump sum	Lump sum			XXXXX	XXXXX	XXXXX	XXXXX	1,108,401.53	1,108,401.53	
Total Price for Schedule 1AB19									Baht	Baht		
										1,407,494.00	1,108,401.53	

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB20 : Aluminum Tube, Connector and Miscellaneous Hardware

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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					109,078.20	109,078.20	XXXXX	XXXXX	
1AB20-2	115 kV and below Compression connector as per Specification attached	Lump sum	Lump sum					99,438.90	99,438.90	XXXXX	XXXXX	
1AB20-3	115 kV and below Miscellaneous hardware as per Specification attached	Lump sum	Lump sum					138,074.20	138,074.20	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	XXXXX	272,940.65	272,940.65	
Total Price for Schedule 1AB20								Baht 346,591.30		Baht 272,940.65		



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB21 : Bus Fitting

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht					
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
					CIF Thai Port									
					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	623,192.90	623,192.90			XXXXX	XXXXX				
1AB21-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB21-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	490,764.41	490,764.41				
				THB	623,192.90		Baht		Baht					
Total Price for Schedule 1AB21									490,764.41					

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB22 : Grounding Material

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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	109,664.50	109,664.50			XXXXX	XXXXX		
1AB22-2	Thermite welding material as per Specification attached	Lump sum	Lump sum				704,700.70	704,700.70	XXXXX	XXXXX		
1AB22-3	Grounding hardware as per Specification attached	Lump sum	Lump sum	THB	370,218.20	370,218.20			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	932,859.43	932,859.43		
Total Price for Schedule 1AB22				THB	479,882.70		Baht		Baht			
							704,700.70		932,859.43			

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB23 : Substation Miscellaneous

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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				51,405.20	51,405.20	XXXXX	XXXXX		
1AB23-2	Fitting for rigid steel conduit as per Specification attached	Lump sum	Lump sum	THB	22,332.20	22,332.20			XXXXX	XXXXX		
1AB23-3	HDPE conduit and fitting as per Specification attached	Lump sum	Lump sum				49,000.00	49,000.00	XXXXX	XXXXX		
1AB23-4	Heat shrinkable insulation material	Lump sum	Lump sum	THB	89,329.90	89,329.90			XXXXX	XXXXX		
1AB23-5	Identification and danger notice plate as per drawing attached	Lump sum	Lump sum				240,000.00	240,000.00	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	356,003.00	356,003.00		
				THB	111,662.10		Baht		Baht			
Total Price for Schedule 1AB23							340,405.20		356,003.00			

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		Unit Price	Amount	Unit Price	Amount
						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. SUK-E-1 SH.1-3, SUK-S-6, SUK-S-7 and TP-E-20.3	1	SET					88,752,114.00	88,752,114.00	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	supply by EGAT	XXXXX	XXXXX	
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	supply by EGAT	XXXXX	XXXXX	
1AB24-4	Cost of Local Transportation, Construction and Installation for Item Nos. 1AB24-1 thru 1AB24-3		Lump sum	Lump sum							15,476,443.00	15,476,443.00	
Total Price for Schedule 1AB24										Baht	88,752,114.00	Baht	15,476,443.00

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB25 : Fault Recording System

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
						CIF Thai Port									
						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 No. 1003, 1008 Drawing No. SUK-E-1 SH.1-3	1	SET					3,326,262.00	3,326,262.00	XXXXX	XXXXX			
1AB25-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB25-1		Lump sum	Lump sum					XXXXX	XXXXX	572,983.00	572,983.00			
Total Price for Schedule 1AB25									Baht 3,326,262.00		Baht 572,983.00				



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MEDIUM COST FOR BID NO. HSIS-S-03

1AB33 : CCTV

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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			2,252,394.00	2,252,394.00	XXXXXX	XXXXXX			
	(1) Outdoor PTZ Dome Camera (2 EA) (2) Indoor Fixed Camera (11 EA) (3) Outdoor Fixed Camera (10 EA) (4) PC Workstation (1 EA) (5) Server (1 EA) (6) Software license (6.1) Software management license (1 License) (6.2) Redording license (23 Licenses) (6.3) Video analytic license (23 Licenses) (7) Ethernet I/O Module (1 EA) (8) Monitor (4 EA) (9) HDMI Optical Extender (2 SET) (10) LAN Switch (2 EA) (11) CCTV Rack Cabinet (1 EA) (12) CCTV steel box/ End-point steel box (Lumpsum) (13) Monitoring Desk (1 EA)											

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB33 : CCTV

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (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
	(14) PoE Injector for Fixed camera (21 EA)									
	(15) Adapter for PTZ camera (2 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) (20 EA)									
	(22) Surge protection-220VAC (7 SET)									
	(23) Line Filter (7 EA)									
	(24) Electrical cable (Lumpsum)									
	(25) EMT conduit (Lumpsum)									
	(26) IMC, Flexible conduit with PVC coating (
	(27) E-flex/HDPE (Lumpsum)									
	(28) Ground System (Lumpsum)									
	(29) Accessories (Lumpsum)									

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MEDIUM COST FOR BID NO. HSIS-S-03

1AB33 : CCTV

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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	404,371.00	404,371.00		
	<p>IMPORTANT :</p> <p>1. The Bidders are required to propose their estimated quantities for such item together with their bid proposal for EGAT's consideration.</p> <p>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</p>											
Total Price for Schedule 1AB33							Baht		Baht			
							2,252,394.00		404,371.00			

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MEDIUM COST FOR BID NO. HSIS-S-03

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

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (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	Unit Price	Amount				
AB34-1	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 SUK)	1	SET				360,000.00	360,000.00	XXXXX	XXXXX		
AB34-2	Conventional Type Charger 48VDC, 150A. (115 kV GIS BUILDING at SUK)	2	SET				290,000.00	580,000.00	XXXXX	XXXXX		
AB34-3	48VDC. Load center Type1: 60 Breaker (115 kV GIS BUILDING at SUK)	1	SET				150,000.00	150,000.00	XXXXX	XXXXX		
AB34-4	Local Transportation, Construction and Installation for item 1AB34-1, 1AB34-2 and 1AB34-3	1	JOB		XXXXX	XXXXX	XXXXX	XXXXX	110,000.00	110,000.00		
Total Price for Schedule 1AB34							Baht 1,090,000.00		Baht 110,000.00			

Signature

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MEDIUM COST FOR BID NO. HSIS-S-03
AB35 : Communication Cable
Schedule 1AB35 : Communication Cable
1AB35 : Communication Cable
SCHEDULE 1 : 115 KV SUNGAI KOLOK SUBSTATION (GIS)
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 Sungai kolok new control building to joint box at 115 kV Yala 2 take-off structure										
1AB35-1.1	Supply of optical fiber cable and accessories including: (a) 36-core non-metallic optical fiber cable (approx. 300 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) HDPE conduit (4 inch) in Hand hole (lump sum) (e) Rack cabinet and accessories (Sungai kolok new control building - 1 Set) (f) Fiber frame termination cabinet with cable tray (Sungai kolok new control building - 1 set) (g) 36 Pigtailes (1.5 meters) (Sungai kolok new control building - 1 set) (h) 6-wire cleat for coiling optical fiber cable at take-off structure (4 sets) (i) 2-way joint box and accessories for optical fiber cable at take-off structure (1 set)	1	LOT					140,130.00	140,130.00	XXXXXX	XXXXXX


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MEDIUM COST FOR BID NO. HSIS-S-03
AB35 : Communication Cable
Schedule 1AB35 : Communication Cable
1AB35 : Communication Cable
SCHEDULE 1 : 115 KV SUNGAI KOLOK SUBSTATION (GIS)
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	Unit Price	Amount	Unit Price	Amount
1AB35-1.2	Local transportation, Construction and Installation for item 1AB35-1.1 (Including splicing work and field testing for optical fiber)	1	JOB		XXXXXX	XXXXXX	XXXXXX	XXXXXX	222,450.00	222,450.00		
1AB35-2 1AB35-2.1	Optical Fiber Cable from fiber frame termination cabinet at Sungai kolok new control building to joint box at 115 kV Narathiwat take-off structure 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) HDPE conduit (4 inch) in Hand hole (lump sum) (e) Fiber frame termination cabinet with cable tray (Sungai kolok new control building - 1 set) (f) 36 Pigtailes (1.5 meters) (Sungai kolok 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					98,430.00	98,430.00	XXXXXX	XXXXXX	

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MEDIUM COST FOR BID NO. HSIS-S-03

AB35 : Communication Cable

Schedule 1AB35 : Communication Cable

1AB35 : Communication Cable

SCHEDULE 1 : 115 KV SUNGAI KOLOK SUBSTATION (GIS)

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1AB35-2.2	Local transportation, Construction and Installation for item 1AB35-2.1 (Including splicing work and field testing for optical fiber)	1	JOB		XXXXXX	XXXXXX	XXXXXX	XXXXXX	200,850.00	200,850.00
1AB35-3 1AB35-3.1	Temporary Optical Fiber Cable from fiber frame termination cabinet at Sungai kolok new control building to fiber frame termination cabinet at Sungai kolok existing control building Supply of optical fiber cable and accessories including: (a) 36-core non-metallic optical fiber cable (approx. 400 meters) (b) EFLEX and/or HDPE conduit with hot-dip galvanized steel clamp (lump sum) (c) HDPE conduit (4 inch) in Hand hole (lump sum) (d) Fiber frame termination cabinet with cable tray (Sungai kolok new control building - 1set, Sungai kolok existing control building - 1set) (e) 36 pigtailed (1.5 meter) (Sungai kolok new control building - 1 set, Sungai kolok existing control building - 1 set)	1	LOT				130,400.00	130,400.00	XXXXXX	XXXXXX



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MEDIUM COST FOR BID NO. HSIS-S-03
AB35 : Communication Cable
Schedule 1AB35 : Communication Cable
1AB35 : Communication Cable
SCHEDULE 1 : 115 KV SUNGAI KOLOK SUBSTATION (GIS)
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	Unit Price	Amount		
1AB35-3.2	Local transportation, Construction and Installation for item 1AB35-3.1 (Including splicing work and field testing for optical fiber)	1	JOB		XXXXXX	XXXXXX	XXXXXX	XXXXXX	231,200.00	231,200.00		
	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		Baht			
							368,960.00		654,500.00			


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MEDIUM COST FOR BID NO. HSIS-S-03

1AB37 : Medium Voltage Switchgear

SCHEDULE 1 : 115 KV SUNGAI KOLOK SUBSTATION (GIS)

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					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 arrangement, indoor, free standing, complete with end covers, cable termination (socket and plug), dummy plugs for future feeder*, control protection and accessories (see Dwg. No. SUK-S-1-03/03) (Switchgear No.1)	1		THB	6,326,931.60	6,326,931.60			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 arrangement, indoor, free standing, complete with end covers, cable termination (socket and plug), dummy plugs for future feeder*, control protection and accessories (see Dwg. No. SUK-S-1-03/03) (Switchgear No.2)	1		THB	6,326,931.60	6,326,931.60			XXXXX	XXXXX		
1AB37-3	Accessories and special tools necessary for medium voltage switchgear (if any give details)	1	lot	THB	83,454.80	83,454.80			XXXXX	XXXXX		
1AB37-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB37-1 thru 1AB37-3		Lumpsum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	5,731,793.10	5,731,793.10		
				THB	12,737,318.00		Baht		Baht			
Total Price for Schedule 1AB37									5,731,793.10			

* 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-03

1AB39 : Commissioning

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					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	640,000.00	640,000.00		
Total Price for Schedule 1AB39							Baht		Baht 640,000.00			



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MEDIUM COST FOR BID NO. HSIS-S-03

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

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (excluding VAT) Baht					
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
					CIF Thai Port									
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount				
1AB40-1	Dismantlement	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	98,750.00	98,750.00				
Total Price for Schedule 1AB40							Baht		Baht 98,750.00					

ศิริชน นิธิพัฒน์

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MEDIUM COST FOR BID NO. HSIS-S-03

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	115 kV Take off Structure Foundation (TS701) Pile , Bored pile Type	FD-TS-7-04	8	set	47,334.00	378,672.00
1C1-2	115 kV Take off Structure Foundation (TS702) Pile Type	FD-TS-7-07	4	set	52,098.00	208,392.00
1C1-3	115 kV Bus support structure foundation (BS701,BS703) Pile Type (BS701 only)	FD-BS-7-02	2	set	16,616.00	33,232.00
1C1-4	115 kV Bus support structure foundation (BS701,BS703) Pile Type (BS701(w)) (Pile type with out tie beam)	FD-BS-7-02	2	set	14,262.00	28,524.00

ศิริกมล นิมะมาน

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MEDIUM COST FOR BID NO. HSIS-S-03

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C1-5	115 kv Cable terminator support structure foundation (TA701)Pile type	Designed by contractor FD-TM-7-05 See Scope of work	16	set	33,633.00	538,128.00
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 only)	FD-GE-0-03	4	set	19,226.00	76,904.00
1C1-7	115 kV Disconnecting Switch Support foundation (DS704) Pile Type	FD-DS-7-08	1	set	34,302.00	34,302.00

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MEDIUM COST FOR BID NO. HSIS-S-03

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C1-8	22 kV Bus support structure foundation (BS201,BS202,BS203,BS204) Pile Type (BS202 only)	FD-BS-2-02	4	set	16,728.00	66,912.00
1C1-9	22 kV Bus support structure foundation (BS201,BS202,BS203,BS204) Pile Type (BS204 only)	FD-BS-2-02	2	set	16,728.00	33,456.00
1C1-10	Dead end structure foundation (DP401)	Designed by contractor TT/FD-DP-4-01 See Scope of work	2	set	148,124.00	296,248.00
1C1-11	Transformer Foundation (T-125) Long Pile Type	FD-TX-7-02	2	set	100,273.00	200,546.00

ศิริพร นิยมาน

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MEDIUM COST FOR BID NO. HSIS-S-03

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C1-12	Outdoor marshalling Cubicle foundation (MC002) Pile Type	FD-MC-0-04	2	set	4,841.00	9,682.00
1C1-13	Disconnecting Switch Operating Platform foundation (OP002)	FD-OP-0-02	5	set	2,832.00	14,160.00
1C1-14	Junction Box Structure foundation (JB001) Pile Type	FD-JB-0-02	2	set	6,368.00	12,736.00
1C1-15	Junction Box Structure foundation (JB003) Pile Type	FD-JB-0-04	2	set	5,763.00	11,526.00

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1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C1-16	40m Communication Tower Foundation Pad type , Pile Type (WSA)	FD-TT-0-01	1	set	269,548.00	269,548.00
1C1-17	Prestressed concrete pole 18m(CP.18) with concrete pole foundation.	Designed by contractor CP-SB-4-01 See Scope of work	7	set	59,277.00	414,939.00
1C1-18	RC. Support for Skid Base (SK202)	Designed by contractor FD-SK-2-07 See Scope of work	2	set	34,266.00	68,532.00
1C1-19	RC. Skid Base 36/24kV (SK401)	Designed by contractor FD-SK-4-03 See Scope of work	4	set	43,880.00	175,520.00

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1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C1-20	RC. Slab for Skid Base (SK201)	Designed by contractor FD-SK-2-07 See Scope of work	4	set	34,266.00	137,064.00
1C1-21	Isolating Transformer Foundation (IST) Pad Type	Designed by contractor TT/FD-TX-0-01 See Scope of work	1	set	23,180.00	23,180.00
1C1-22	Lighting Relay Panel foundation (RP002) Pile Type	FD-RP-0-02	1	set	6,375.00	6,375.00
1C1-23	Lamp post for fence and access road lighting foudation (LP3) (LED type) Pad Type & Pile Type <i>ศิริพร นิยมาน</i>	FD-LP-0-05	30	set	11,383.00	341,490.00

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MEDIUM COST FOR BID NO. HSIS-S-03

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C1-24	Fire Wall 8.00m Height (FW) Pile Type	FD-FW-0-02	1	set	432,099.00	432,099.00
1C1-25	Driven Pile (Driven Pile, Dowel bar are included and pile shoe if require)	SD-PL-0-01	Lump Sum	Lump Sum	3,772,508.00	3,772,508.00
1C1-26	Dead end structure foundation (DP401) (Existing to be removed)	TT/FD-DP-4-01	1	set	14,477.00	14,477.00
1C1-27	Disconnecting switch operating platform foundation (OP001) (Existing to be removed)	FD-OP-0-01	1	set	59.00	59.00



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MEDIUM COST FOR BID NO. HSIS-S-03

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C1-28	Isolating Transformer Foundation (IST) Pad Type (Existing to be removed)	TT/FD-TX-0-01	1	set	1,342.00	1,342.00
1C1-29	RC. Slab for Skid Base (SK201) (Existing to be removed)	FD-SK-2-07	1	set	4,399.00	4,399.00
Total Price for Schedule 1C1					Baht	7,604,952.00


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MEDIUM COST FOR BID NO. HSIS-S-03

1C2 : Cable Trench

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	Standard cable trench, steel cover included (Type"A")	SD-CE-0-02 See Dwg.No.SUK-C-3	Lump Sum	Lump Sum	1,367,842.00	1,367,842.00
1C2-2	Standard cable trench, steel cover included (Type"B")	SD-CE-0-02 See Dwg.No.SUK-C-3	Lump Sum	Lump Sum	1,071,228.00	1,071,228.00
1C2-3	Cable trench, RC cover included (Type"A") (with cleat support)	Designed by Contractor SD-CE-0-02 See Dwg.No.SUK-C-3	Lump Sum	Lump Sum	5,430,703.00	5,430,703.00
1C2-4	Cable trench, steel cover included (Type"A") (with cleat support)	Designed by Contractor SD-CE-0-02 See Dwg.No.SUK-C-3	Lump Sum	Lump Sum	4,065,674.00	4,065,674.00

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MEDIUM COST FOR BID NO. HSIS-S-03

1C2 : Cable Trench

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C2-5	Cable trench, steel cover included (Type"B") (with cleat support)	Designed by Contractor SD-CE-0-02 See Dwg.No.SUK-C-3	Lump Sum	Lump Sum	135,519.00	135,519.00
Total Price for Schedule 1C2					Baht 12,070,966.00	



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MEDIUM COST FOR BID NO. HSIS-S-03

1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	115kV GIS and Control Building	Designed by contractor See Scope of work SUK-GIS-7-01A	Lump Sum	Lump Sum	59,369,172.00	59,369,172.00
1C3-1.1	Air conditioning system and Ventilation system					
1C3-1.1.1	Minimum 30,000 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	38,785.05	38,785.05

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MEDIUM COST FOR BID NO. HSIS-S-03

1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C3-1.1.2	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	42,523.36	42,523.36
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)		9	set	54,672.90	492,056.10
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)		4	set	56,915.89	227,663.56

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1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C3-1.1.5	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	67,422.62	134,845.24
1C3-1.1.6	Extra work for air conditioning system		Lump Sum	Lump Sum	Included in 1C3-1	Included in 1C3-1
1C3-1.1.7	Ventilation system		Lump Sum	Lump Sum	Included in 1C3-1	Included in 1C3-1

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1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C3-1.2	Solar rooftop system		Lump Sum	Lump Sum	2,520,000.00	2,520,000.00
1C3-2	22/33kV Switchgear Building	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.SUK-C-1	Lump Sum	Lump Sum	9,433,917.00	9,433,917.00

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1C3 : Building

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C3-2.1	Air conditioning system and Ventilation system					
1C3-2.1.1	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	56,915.89	227,663.56
1C3-2.1.2	Extra work for air conditioning system		Lump Sum	Lump Sum	Included in 1C3-1	Included in 1C3-1

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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
1C3-2.1.3	Ventilation system		Lump Sum	Lump Sum	Included in 1C3-1	Included in 1C3-1
Total Price for Schedule 1C3					Baht	72,486,625.87



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MEDIUM COST FOR BID NO. HSIS-S-03

1C4 : Earth Work, Road and Crushed Rock Surfacing

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	RC.Road type " E " section 4 - 4	SD-RD-0-01 See Dwg. SUK-C-6	Lump Sum	Lump Sum	1,394,630.00	1,394,630.00
1C4-2	Transformer loading	SD-RD-0-03 See Dwg. SUK-C-6	Lump Sum	Lump Sum	58,044.00	58,044.00
1C4-3	Crushed rock surfacing 0.10 m thickness	See Dwg. SUK-C-1	Lump Sum	Lump Sum	572,157.00	572,157.00
Total Price for Schedule 1C4					Baht	2,024,831.00

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MEDIUM COST FOR BID NO. HSIS-S-03

1C5 : Water Supply System

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 Dwg. SUK-C-9 See Scope of work	Lump Sum	Lump Sum	100,331.00	100,331.00
1C5-2	15 cu.m Water tank tower Pile type	WD-WT-0-02	1	set	818,020.00	818,020.00
1C5-3	50 cu.m Underground water tank (Pile type)	WD-UT-0-01	1	set	371,048.00	371,048.00
1C5-4	Water storage tank capacity 2,000 liters, Polyethylene type	Designed by Contractor See Dwg.SUK-C-9 See Scope of work	1	set	21,967.00	21,967.00
1C5-5	Deep well with water treatment system	Designed by Contractor See Dwg.SUK-C-9 See Scope of work	1	set	640,450.00	640,450.00
1C5-6	Water treatment system house	Designed by Contractor See Dwg.SUK-C-9 See Scope of work	1	set	72,268.00	72,268.00

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MEDIUM COST FOR BID NO. HSIS-S-03

1C5 : Water Supply System

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	Laying of water supply : HDPE. pipe (PN10) with valve & fittings	Designed by Contractor See Dwg.SUK-C-9 See Scope of work	Lump Sum	Lump Sum	319,366.00	319,366.00
1C5-8	Driven Pile (Driven Pile, Dowel bar are included and pile shoe if require)	SD-PL-0-01	Lump Sum	Lump Sum	499,727.00	499,727.00
Total Price for Schedule 1C5					Baht	2,843,177.00



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MEDIUM COST FOR BID NO. HSI-S-03

1C6 : Drainage System

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 Dwg.SUK-C-6 See Scope of work	Lump Sum	Lump Sum	3,285,704.00	3,285,704.00
1C6-2	Oil separator (Pile type)	SD-OS-0-02	1	set	1,304,814.00	1,304,814.00
1C6-3	Dia. 0.50 m Black steel pipe (Spiral-Seam) TIS 427-2562 (or latest edition)	WD-DN-0-01	Lump Sum	Lump Sum	588,890.00	588,890.00
1C6-4	Dia. 0.15m PVC. Pipe (Class 8.5)	SD-CE-0-02	Lump Sum	Lump Sum	37,808.00	37,808.00



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MEDIUM COST FOR BID NO. HSIS-S-03

1C6 : Drainage System

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C6-5	Handhole with concrete cover (min. wall 7cm)	Designed by contractor See Scope of work SD-HH-0-03	11	set	8,820.00	97,020.00
1C6-6	Driven Pile (Driven Pile, Dowel bar are included and pile shoe if require)	SD-PL-0-01	Lump Sum	Lump Sum	354,985.00	354,985.00
Total Price for Schedule 1C6					Baht 5,669,221.00	



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MEDIUM COST FOR BID NO. HSIS-S-03

1C7 : Special Construction Works

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	861,333.00	861,333.00
1C7-2	Architectural and Civil engineering design work	-	Lump Sum	Lump Sum	4,956,621.00	4,956,621.00
1C7-3	Test and commissioning for fire protection system in switchyard	-	Lump Sum	Lump Sum	97,558.00	97,558.00
1C7-4	Test and commissioning for fire pump system	-	Lump Sum	Lump Sum	75,841.00	75,841.00
1C7-5	Test and commissioning for inert gas system (Test in Electrical room)	-	Lump Sum	Lump Sum	78,731.00	78,731.00

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MEDIUM COST FOR BID NO. HSIS-S-03

1C7 : Special Construction Works

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C7-6	Fire Protection design work	-	Lump Sum	Lump Sum	381,639.00	381,639.00
1C7-7	Dynamic Pile load test	-	Lump Sum	Lump Sum	292,980.00	292,980.00
1C7-8	Static pile load test	-	3	set	163,698.00	491,094.00
Total Price for Schedule 1C7					Baht 7,235,797.00	



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MEDIUM COST FOR BID NO. HSIS-S-03

1C9 : Fire Protection System

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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 (inert gas and detectors) for 115 kV GIS with Control building	Designed by Contractor	Lump Sum	Lump Sum	6,366,482.00	6,366,482.00
1C9-2	Fire pump house (Dowel bar and Pile cut off are included)	SD-FPH-8-01	1	set	1,260,774.00	1,260,774.00
1C9-3	Water storage tank min. capacity 250 cu.m	WD-UT-0-05	1	set	1,762,834.00	1,762,834.00
1C9-4	Wheel fire extinguisher (2*50 lbs) with cabinet	HS-WR-0-04	1	set	233,198.00	233,198.00
1C9-5	Fire pump system	Designed by Contractor	Lump Sum	Lump Sum	5,684,623.00	5,684,623.00

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MEDIUM COST FOR BID NO. HSIS-S-03

1C9 : Fire Protection System

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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
1C9-6	Fire Protection System for switchyard	Designed by Contractor	Lump Sum	Lump Sum	2,239,312.00	2,239,312.00
1C9-7	Fire Protection environmental monitoring system	Designed by Contractor	Lump Sum	Lump Sum	1,017,041.00	1,017,041.00
1C9-8	Driven Pile (Driven Pile, Dowel bar are included and pile shoe if require) (for Water tank only)	SD-PL-0-01	Lump Sum	Lump Sum	517,686.00	517,686.00
Total Price for Schedule 1C9					Baht	19,081,950.00

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MEDIUM COST FOR BID NO. HSIS-S-03
1D7 : Spare Parts for SF6 Gas Insulated Switchgear
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		(excluding VAT) Baht	
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D7-1	Note: detail and breakdown price of each equipment for each item shall be submitted together with tender documents during the bidding Gas density meter with two-stage contacts for circuit breaker compartment spare parts for GIS	1		THB	35,697.20	35,697.20			XXXXX	XXXXX
1D7-2	Gas density meter for other compartment spare parts for GIS	1		THB	64,447.90	64,447.90			XXXXX	XXXXX
1D7-3	Rupture disc of overpressure protection device spare parts for GIS (1 EA for each type/each operating pressure)	1		THB	27,857.50	27,857.50			XXXXX	XXXXX
1D7-4	Pump with motor for hydraulic spare parts for GIS (if any)	1		THB	60,729.90	60,729.90			XXXXX	XXXXX
1D7-5	Maintenance closing device for circuit breaker	1		THB	52,103.70	52,103.70			XXXXX	XXXXX
1D7-6	SF6 gas filling cart accessories for GIS	1		THB	231,157.30	231,157.30			XXXXX	XXXXX
1D7-7	Operating Analyzer Fitting Means accessories for GIS	1		THB	259,675.90	259,675.90			XXXXX	XXXXX
1D7-8	Hand pump for hydraulic accessories for GIS (if any)	1		THB	535,414.00	535,414.00			XXXXX	XXXXX

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MEDIUM COST FOR BID NO. HSIS-S-03
1D7 : Spare Parts for SF6 Gas Insulated Switchgear
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		(excluding VAT) Baht	
					CIF Thai Port		Ex-works Price			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D7-9	Loose pressure gauge completed with necessary fitting for circuit breaker compartment accessories for GIS (1 gauge/1 set precision pressure gauge spare parts for GIS, can be combined with Gas density meter for CB compartment)	1		THB	274,617.20	274,617.20			XXXXXX	XXXXXX
1D7-10	Cost of Local Transportation for Item No. 1D7-1 thru 1D7-9		Lumpsum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	77,085.03	77,085.03
Total Price for Schedule 1D7				THB	1,541,700.60		Baht		Baht 77,085.03	


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MEDIUM COST FOR BID NO. HSIS-S-03

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

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	Unit Price	Amount				
1D11-1	Fuse link or refill unit 7E for 33 kV power fuse (standard speed)	6		THB	72,091.80	432,550.80			XXXXX	XXXXX		
1D11-2	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	18,170.90	18,170.90			XXXXX	XXXXX		
1D11-3	Cost of Local Transportation for Item No. 1D11-1 thru 1D11-2		Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	22,536.09	22,536.09		
				THB	450,721.70		Baht		Baht			
Total Price for Schedule 1D11									22,536.09			

Signature

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MEDIUM COST FOR BID NO. HSIS-S-03

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

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	
1D12-1	Fuse time lag type 500A	6						10,596.30	63,577.80	XXXXX	XXXXX
1D12-2	Cost of Local Transportation for Item No. 1D12-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	3,178.89	3,178.89
Total Price for Schedule 1D12								Baht	63,577.80	Baht	3,178.89

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MEDIUM COST FOR BID NO. HSIS-S-03

1D22 : Spare Parts for Grounding Material

SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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	531,784.00	531,784.00			XXXXX	XXXXX		
1D22-2	Cost of Local Transportation for Item No. 1D22-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	26,589.20	26,589.20		
				THB	531,784.00		Baht		Baht			
Total Price for Schedule 1D22									26,589.20			



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MEDIUM COST FOR BID NO. HSIS-S-03
1D24 : Spare Parts for Control and Protection System
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		(excluding VAT) Baht	
						CIF Thai Port		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			9,737,733.00	9,737,733.00	XXXXX	XXXXX	
1D24-2	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as spare part (For Primary Protection of Item Nos. 2AB24-1 and 3AB24-1) -Current Input Rating 5A -Specification No.1002	1	EA			395,107.00	395,107.00	XXXXX	XXXXX	
1D24-3	LINE CURRENT DIFFERENTIAL RELAY (87L)	Supply as spare part (For Secondary Protection of Item Nos. 2AB24-1) -Current Input Rating 5A -Specification No.1002	1	EA			395,107.00	395,107.00	XXXXX	XXXXX	
1D24-4	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	-Supply as spare part -Specification No. 1002	1	EA			162,581.00	162,581.00	XXXXX	XXXXX	
1D24-5	BREAKER FAILURE RELAY (50BF+62BF)	-Supply as spare part -Specification No. 1002	1	EA			153,707.00	153,707.00	XXXXX	XXXXX	

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MEDIUM COST FOR BID NO. HSIS-S-03
1D24 : Spare Parts for Control and Protection System
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		(excluding VAT) Baht	
						CIF Thai Port		Ex-works Price (excluding VAT) Baht			
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D24-6	Cost of Local Transportation for Item Nos. 1D24-1 thru 1D24-5		Lump	Lump							
			sum	sum		XXXXX	XXXXX	XXXXX	XXXXX	41,641.00	41,641.00
Total Price for Schedule 1D24								Baht	10,844,235.00	Baht	41,641.00


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MEDIUM COST FOR BID NO. HSIS-S-03
1D25 : Spare Parts for Fault Recording System
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		(excluding VAT) Baht	
						CIF Thai Port		Ex-works Price (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			891,336.00	891,336.00	XXXXX	XXXXX	
1D25-2	Cost of Local Transportation for Item No. 1D25-1		Lump sum	Lump sum			XXXXX	XXXXX	11,335.00	11,335.00	
Total Price for Schedule 1D25							Baht 891,336.00		Baht 11,335.00		

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MEDIUM COST FOR BID NO. HSIS-S-03
1D37 : Spare Parts for Medium Voltage Switchgear
SUPPLY AND CONSTRUCTION OF 115 KV SUNGAI KOLOK 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		(excluding VAT) Baht	
					CIF Thai Port		Ex-works Price (excluding VAT) Baht			
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1D37-1	Note: detail and breakdown price of each equipment for each item shall be submitted together with tender documents during the bidding Gas density meter spare parts for medium voltage switchgear	1	set	THB	11,556.60	11,556.60			XXXXX	XXXXX
1D37-2	Pressure relief device spare parts for medium voltage switchgear (1 EA for each type/each operating pressure)	1	set	THB	6,365.70	6,365.70			XXXXX	XXXXX
1D37-3	SF6 gas filling cart accessories for Medium Voltage Switchgear	1	set	THB	154,614.90	154,614.90			XXXXX	XXXXX
1D37-4	Cost of Local Transportation for Item No. 1D37-1 thru 1D37-3									
		Lumpsum	Lumpsum		XXXXX	XXXXX	XXXXX	XXXXX	8,626.86	8,626.86
Total Price for Schedule 1D37				THB	172,537.20		Baht		Baht 8,626.86	

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MEDIUM COST FOR BID NO. HSIS-S-03

2AB18 : Low Voltage Cable and Conductor

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 2 SUBSTATION

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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB18-1	750 V power cable as per Specification attached	Lump sum	Lump sum				42,075.00	42,075.00	XXXXXX	XXXXXX		
2AB18-2	600 V control cable with PVC insulation as per Specification attached	Lump sum	Lump sum				1,070,388.00	1,070,388.00	XXXXXX	XXXXXX		
2AB18-3	Cost of Local Transportation, Construction and Installation for Item No. 2AB18-1 thru 2AB18-2	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	584,043.08	584,043.08		
Total Price for Schedule 2AB18							Baht 1,112,463.00		Baht 584,043.08			



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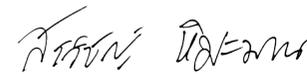
MEDIUM COST FOR BID NO. HSIS-S-03

2AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 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, 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	Unit Price	Amount				
2AB24-1	115 kV LINE PROTECTION (87L, 87L, 79, 2-BF)	Panel No. 46R - Current Input Rating : 5A - Same Model and Connector Type as Supplied in Item No.1AB24-1 (Item No.3 and No.6 in Bill of Materials for 1AB24)(Primary Protection and Secondary Protection) -Drawing No. YL2-E-1.2, YL2-E-2.2, YL2-E-3, TP-E-10.1 -Specification No. 1002 -See Scope of Work	1	EA					2,296,079.00	2,296,079.00	XXXXXX	XXXXXX	



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2AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 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, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
						CIF Thai Port							
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB24-2	E1 Converter Panel	Panel no. E1 CONV.-1 -1 set of Multimode Patch Cord Cable and 1 set of Coaxial Cable (RG179) shall be supplied in each E1 Converter. -Same Type as Supplied in Item 1AB24-1 (Item no.28 in Bill of Material For 1AB24-1) -Drawing No. YL2-E-1.2, YL2-E-2.2, YL2-E-3, TP-E-10.20 -Specification No. 1002 and 1008 -See Scope of Work	1	EA					457,064.00	457,064.00	XXXXX	XXXXX	

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2AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 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, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Baht	
						CIF Thai Port							
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB24-3	MARSHALLING PANEL FOR FRS	Panel no.MP-FRS1 Drawing Nos. YL2-E-1.2 SH.2/2, YL2-E-2.2 SH.2.2, YL2-E-3 -Specification No. 1002 -See Scope of Work	1	EA				394,923.00	394,923.00	XXXXX	XXXXX		
2AB24-4	MCB, 6A, 1 POLE FOR DC SUPPLY	Installed in Panel No. 3C (For Scheme Breaker) -Drawing No. YL2-E-1.2, YL2-E-2.2, YL2-E-3 -Specification No. 1002 -See Scope of Work	1	EA				2,865.00	2,865.00	XXXXX	XXXXX		

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2AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 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, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
						CIF Thai Port							
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB24-5	Modify to the existing control and protection system	Drawing Nos. YL2-E-1.2 SH.2/2, YL2-E-2.2 SH.2.2, YL2-E-3 -Specification No. 1002 -See Scope of Work	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	14,250.00	14,250.00		
2AB24-6	Cost of Local Transportation, Construction and Installation for Item Nos. 2AB24-1 thru 2AB24-4		Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	542,666.00	542,666.00		
Total Price for Schedule 2AB24									Baht	3,150,931.00	Baht	556,916.00	

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MEDIUM COST FOR BID NO. HSIS-S-03

2AB25 : Fault Recording System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 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, Construction and Installation (excluding VAT) Baht					
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
						CIF Thai Port									
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount				
2AB25-1	FAULT RECORDING SYSTEM, 48 ANALOG INPUT, 96 DIGITAL INPUT.	-Drawing Nos. YL2-E-1.2 SH.2/2, YL2-E-2.2 SH.2.2, YL2-E-3 -See Scope of Work -Specification Nos. 1003	1	SET					2,529,546.00	2,529,546.00	XXXXX	XXXXX			
2AB25-2	Modify to the existing fault recording system	-Drawing Nos. YL2-E-1.2 SH.2/2, YL2-E-2.2 SH.2.2, YL2-E-3 -See Scope of Work -Specification Nos. 1003	Lump sum	Lump sum					XXXXX	XXXXX	27,000.00	27,000.00			
2AB25-3	Cost of Local Transportation, Construction and Installation for Item No. 2AB25-1		Lump sum	Lump sum					XXXXX	XXXXX	445,251.00	445,251.00			
Total Price for Schedule 2AB25											Baht	2,529,546.00	Baht	472,251.00	

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MEDIUM COST FOR BID NO. HSIS-S-03

2AB38 : Remote Terminal Unit

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 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, Construction and Installation			
						Foreign Supply		Local Supply		(excluding VAT) Baht		(excluding VAT) Baht	
						CIF Thai Port		Ex-works Price					
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB38-1	Modification to the existing remote terminal unit system	-Drawing Nos.YL2-E-1.2 SH.2/2, YL2-E-2.2 SH.2.2, YL2-E-3, TP-E-10.1 -Specification No. 1002 -See Scope of Work	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	33,000.00	33,000.00		
Total Price for Schedule 2AB38									Baht	Baht	33,000		



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MEDIUM COST FOR BID NO. HSIS-S-03

2AB39 : Commissioning

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV YALA 2 SUBSTATION

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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB39-1	Commissioning	Lump Sum	Lump Sum		XXXXX	XXXXX	XXXXX	XXXXX	185,000.00	185,000.00		
Total Price for Schedule 2AB39							Baht		Baht 185,000.00			

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MEDIUM COST FOR BID NO. HSIS-S-03

3AB5 : Current Transformer and Junction Box

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION

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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB5-1	115 kV CT, 550 kV BIL, 100/-/1200:5//5//5//5 A, 40 kA, oil filled as per Rating and Features RF CT75E6	3		THB	198,000.00	594,000.00			XXXXX	XXXXX		
3AB5-2	Steel Supporting Structure for CT75E6 (for item no.3AB5-1), H = 4.50 m. as per Dwg. No. ST-CT-4-01 and SD-AB-0-01	3					17,000.00	51,000.00	XXXXX	XXXXX		
3AB5-3	Junction Box type CT1 (for Item No. 3AB5-1) as per Dwg. No. TP-E-18.2 and TP-E-18.4	1					32,000.00	32,000.00	XXXXX	XXXXX		
3AB5-4	Cost of Local Transportation, Construction and Installation for Item No. 3AB5-1 thru 3AB5-3		Lumpsum	Lumpsum	XXXXX	XXXXX	XXXXX	XXXXX	304,650.00	304,650.00		
				THB	594,000.00		Baht		Baht			
Total Price for Schedule 3AB5							83,000.00		304,650.00			

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MEDIUM COST FOR BID NO. HSIS-S-03

3AB15 : Insulator

**SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB15-1	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	XXXXXX	XXXXXX		
3AB15-2	7.5 kV station post insulator ANSI TR. No. 202 as per Specification attached	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXXX	XXXXXX		
3AB15-3	Cost of Local Transportation, Construction and Installation for Item No. 3AB15-1 thru 3AB15-2	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	2,915.80	2,915.80		
Total Price for Schedule 3AB15									Baht	2,915.80		



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MEDIUM COST FOR BID NO. HSIS-S-03

3AB18 : Low Voltage Cable and Conductor

**SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB18-1	750 V power cable as per Specification attached	Lump sum	Lump sum				9,900.00	9,900.00	XXXXX	XXXXX		
3AB18-2	600 V control cable with PVC insulation as per Specification attached	Lump sum	Lump sum				157,476.00	157,476.00	XXXXX	XXXXX		
3AB18-3	Annealed copper ground wire as per Specification attached	Lump sum	Lump sum				34,122.00	34,122.00	XXXXX	XXXXX		
3AB18-4	Aluminum conductor as per Specification attached	Lump sum	Lump sum				8,685.60	8,685.60	XXXXX	XXXXX		
3AB18-5	Cost of Local Transportation, Construction and Installation for Item No. 3AB18-1 thru 3AB18-4	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	165,519.59	165,519.59		
Total Price for Schedule 3AB18							Baht 210,183.60		Baht 165,519.59			

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MEDIUM COST FOR BID NO. HSIS-S-03
3AB20 : Aluminum Tube, Connector and Miscellaneous Hardware
SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB20-1	115 kV and below Compression connector as per Specification attached	Lump sum	Lump sum				6,012.60	6,012.60	XXXXX	XXXXX		
3AB20-2	115 kV and below Miscellaneous hardware as per Specification attached	Lump sum	Lump sum				4,854.30	4,854.30	XXXXX	XXXXX		
3AB20-3	Cost of Local Transportation, Construction and Installation for Item No. 3AB20-1 thru 3AB20-2	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	8,557.68	8,557.68		
Total Price for Schedule 3AB20							Baht 10,866.90		Baht 8,557.68			


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MEDIUM COST FOR BID NO. HSIS-S-03

3AB21 : Bus Fitting

**SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Baht	
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB21-1	115 kV and below Bus fitting as per Specification attached	Lump sum	Lump sum	THB	27,722.20	27,722.20			XXXXX	XXXXX		
3AB21-2	Cost of Local Transportation, Construction and Installation for Item No. 3AB21-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	21,831.23	21,831.23		
				THB	27,722.20		Baht		Baht			
Total Price for Schedule 3AB21									21,831.23			



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MEDIUM COST FOR BID NO. HSIS-S-03

3AB22 : Grounding Material

**SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB22-1	Thermite welding material as per Specification attached	Lump sum	Lump sum				24,041.60	24,041.60	XXXXX	XXXXX		
3AB22-2	Grounding hardware as per Specification attached	Lump sum	Lump sum	THB	693.00	693.00			XXXXX	XXXXX		
3AB22-3	Cost of Local Transportation, Construction and Installation for Item No. 3AB22-1 thru 3AB22-2	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	19,478.50	19,478.50		
				THB	693.00	Baht	24,041.60		Baht 19,478.50			
Total Price for Schedule 3AB22												



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3AB23 : Substation Miscellaneous

**SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION
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 (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB23-1	Rigid steel conduit as per Specification attached	Lump sum	Lump sum				9,649.20	9,649.20	XXXXXX	XXXXXX		
3AB23-2	Fitting for rigid steel conduit as per Specification attached	Lump sum	Lump sum	THB	3,075.60	3,075.60			XXXXXX	XXXXXX		
3AB23-3	Identification and danger notice plate as per drawing attached	Lump sum	Lump sum				1,050.00	1,050.00	XXXXXX	XXXXXX		
3AB23-4	Cost of Local Transportation, Construction and Installation for Item No. 3AB23-1 thru 3AB23-3	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	10,847.66	10,847.66		
				THB	3,075.60	Baht			Baht	10,847.66		
Total Price for Schedule 3AB23							10,699.20		10,847.66			



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MEDIUM COST FOR BID NO. HSI-S-03

3AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT 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, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
						CIF Thai Port							
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB24-1	LINE CURRENT DIFFERENTIAL RELAY (87L)	Installed in Panel No. 3R (Primary) - Current Input Rating : 5A - Same Model and Connector Type as Supplied in Item No.1AB24-1 (Item No.3 in Bill of Materials for 1AB24) -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1, -Specification No. 1002 -See Scope of Work	1	EA					395,107.00	395,107.00	XXXXX	XXXXX	



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3AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT 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, 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
						Unit Price	Amount	Unit Price	Amount						
3AB24-2	E1 CONVERTER	Installed in Tele-Protection Rack Panel -1 set of Multimode Patch Cord Cable and 1 set of Coaxial Cable (RG179) shall be supplied in each E1 Converter. -Same Type as Supplied in Item 1AB24-1 (Item no.28 in Bill of Material For 1AB24-1) -Specification No. 1002 and 1008 -See Scope of Work	1	SET					159,028.00	159,028.00	XXXXX	XXXXX			



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3AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT 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, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
						CIF Thai Port		Ex-works Price (excluding VAT) Baht					
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB24-3	MCB, 6A,2 POLE FOR DC SUPPLY WITH AUX.	Installed in Tele-Protection Rack Panel - Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1, TP-E-10.20 -Specification No. 1002 and 1008 -See Scope of Work	2	EA				5,772.00	11,544.00	XXXXX	XXXXX		
3AB24-4	CUT OFF SWITCH, 10 CONTACTS (DTTCO, 87CO, 86ACO, 50/51SCO)	Installed in Panel No. 3R (87CO) -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 (For Relay 87L) -Specification No. 1002 -See Scope of Work	1	EA				3,059.00	3,059.00	XXXXX	XXXXX		



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3AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT 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, Construction and Installation (excluding VAT) Baht					
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
						CIF Thai Port									
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount				
3AB24-5	INDICATING LAMP (R,G,IL,LG)	Installed in Panel No. 3R -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 (For Relay 87L) -Specification No. 1002 -See Scope of Work	1	EA				491.00	491.00	XXXXX	XXXXX				
3AB24-6	DC UNDERVOLTAGE RELAY (27XB,27XR)	Installed in Panel No. 3R 2 EA and in Panel No.3F 1 EA -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 -Specification No. 1002 -See Scope of Work	3	EA			14,452.00	43,356.00	XXXXX	XXXXX					



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3AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT 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, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Baht	
						CIF Thai Port		Ex-works Price (excluding VAT) Baht					
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB24-7	INTERPOSING RELAY (CCX,CTX)	Installed in Panel No.RTB (For CCX) -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 -Specification No. 1002 -See Scope of Work	1	EA				2,578.00	2,578.00	XXXXX	XXXXX		
3AB24-8	LATCHING RELAY (8 contacts,79COCX)	Installed in Panel No.3F (For 43X) -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 -Specification No. 1002 -See Scope of Work	1	EA				25,041.00	25,041.00	XXXXX	XXXXX		
3AB24-9	BREAKER CONTROL SWITCH (CS)	Installed in Panel No.3F -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 -Specification No. 1002 -See Scope of Work	1	EA				8,705.00	8,705.00	XXXXX	XXXXX		


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3AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT 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, 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
						Unit Price	Amount	Unit Price	Amount						
3AB24-10	MCB, 6A, 2 POLE FOR DC SUPPLY	Installed in Panel No.3F -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 -Specification No. 1002 -See Scope of Work	1	EA				3,949.00	3,949.00	XXXXX	XXXXX				
3AB24-11	CUT OFF SWITCH, 20 CONTACTS (PTTCO, 85CO, 43CCS)	Installed in Panel No. 3R (PTT-CO) -Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 -Specification No. 1002 -See Scope of Work	1	EA				4,357.00	4,357.00	XXXXX	XXXXX				
3AB24-12	Modify to the existing control and protection system 	-Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 -Specification No. 1002 -See Scope of Work	Lump sum	Lump sum				XXXXX	XXXXX	57,000.00	57,000.00				

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3AB24 : Control and Protection System

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT 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, 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
						Unit Price	Amount	Unit Price	Amount						
3AB24-13	Cost of Local Transportation, Construction and Installation for Item Nos. 3AB24-1 thru 3AB24-11		Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	203,029.50	203,029.50				
Total Price for Schedule 3AB24								Baht	657,215.00	Baht	260,029.50				

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MEDIUM COST FOR BID NO. HSIS-S-03

3AB38 : Remote Terminal Unit

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT 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, 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	Unit Price	Amount				
3AB38-1	Modification to the existing remote terminal unit system	-Drawing Nos. NW-E-1 SH.1/1, NW-E-2 SH.1/1, NW-E-3 SH.1/1 -Specification No. 1002 -See Scope of Work	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	30,000.00	30,000.00		
Total Price for Schedule 3AB38									Baht	Baht	30,000		


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MEDIUM COST FOR BID NO. HSIS-S-03

3AB39 : Commissioning

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION

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			
					Foreign Supply		Local Supply		(excluding VAT) Baht		(excluding VAT) Baht	
					CIF Thai Port		Ex-works Price					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
3AB39-1	Commissioning				XXXXXX	XXXXXX	XXXXXX	XXXXXX	185,000.00	185,000.00		
		Lump Sum	Lump Sum									
Total Price for Schedule 3AB39							Baht		Baht 185,000.00			


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MEDIUM COST FOR BID NO. HSIS-S-03

3AB40 : Installation of Equipment and Steel Structure Supplied by EGAT

SUPPLY AND CONSTRUCTION FOR IMPROVEMENT OF 115 KV NARATHIWAT SUBSTATION

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 (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	Unit Price	Amount				
3AB40-1	Dismantlement	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	68,750.00	68,750.00		
Total Price for Schedule 3AB40							Baht		Baht 68,750.00			



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Important Information
for
Invitation to Bid No. HSIS-S-03

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:

Article A-6. Preparation and Delivery of Bids and Article B-1. Preparation of Bids

Details on how to prepare the proposal have been revised. Bids shall be prepared in accordance with the Instructions to Bidders contained in the Bidding Documents in one (1) original hard copy and one (1) electronic copy contained in USB flash drive.

Article A-6. Preparation and Delivery of Bids

Details of bid opening time and place shall be specified in the Tentative Schedule.

Article A-7. Availability of Bidding Documents

Availability of Bidding Documents has been changed from CD-ROM to electronic files for download via link provided by EGAT.

Channel of Documents Submission

For channel of document submission in the hereunder Articles, facsimile and telex has been replaced with letters submitted electronically or electronic mails (E-mails).

- Article B-1. Preparation of Bids
- Article B-4. Validity of Bids
- Article D-9. Notices
- Article E-20. Documents Required for Each Shipment
- Article F-11. Payment

Article B-2. Bid Prices

For Source of Supply and Service 1. Prices for Equipment , Prices for Equipment manufactured outside Thailand (imported Equipment) shall be firm CIF Thai Port basis and quoted in Thai baht, US dollar, euro, Japanese yen, renminbi (Chinese yuan), or in the Bidder's or Manufacturer's home currency only if his currency trading is prevailed at the time of bidding in any international market other than in Bidder's or Manufacturer's home country.

Article E-19. Shipment

The Maritime Promotion Bureau has been updated to the Maritime Promotion Division and its contact information has also been updated.

Article F-11. Payment

After each payment is made, the Contractor or beneficiary shall issue and submit the receipt to EGAT as detailed in the paragraph added at the end of this article.

DATA SHEET

for

Invitation to Bid No. HSIS-S-03

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

1. 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).”

2. Article B-3. Bid Security

The amount of bid security shall be USD 1,037,700.- or THB 33,800,000.-.

3. Article B-4. Validity of Bids

The validity of the bid shall be for two hundred and ten (210) Days from the date specified for opening of bid.

4. 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.

5. 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 :

<u>Equipment</u>	<u>Period of Guarantee (Year)</u>
- 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)

SECTION A
INVITATION TO BID

ELECTRICITY GENERATING AUTHORITY OF THAILAND

Nonthaburi
Thailand

INVITATION TO BID NO. HSIS-S-03

SUPPLY AND CONSTRUCTION OF 115 kV SUNGAI KOLOK SUBSTATION (GIS), IMPROVEMENT OF 115 kV YALA 2 AND 115 kV NARATHIWAT SUBSTATIONS

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

A-1. Invitation

The Electricity Generating Authority of Thailand (EGAT) hereby invites sealed bids for supply and construction of 115 kV Sungai Kolok Substation (GIS), Improvement of 115 kV Yala 2 and 115 kV Narathiwat 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 Sungai Kolok Substation (GIS), Improvement of 115 kV Yala 2 and 115 kV Narathiwat 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 have one of the following qualifications regarding experiences executing contract of supply and construction substation.

1) Having experience with EGAT in executing at least one (1) contract as contractor (not as subcontractor) for supply and construction of a complete 115 kV or above conventional or GIS substation, with its overall performance satisfactory to EGAT.

2) Having experience in executing at least two (2) contracts as contractor (not as subcontractor) for supply and construction of a complete 115 kV or above conventional or GIS substation with other Electricity Authorities of Thailand or in an overseas country (not his own country).

Experience record of the Bidder or either member of the joint venture /consortium, including experience record derived from being a member of other joint venture or consortium in previous project(s) is acceptable. It is not allowed to combine the experience records of each member of the joint venture/consortium in order to meet the experience requirements.

- c. Further to b.1) and b.2) mentioned above, having a record of experience within the last ten (10) years on the technical knowledge and practical experience on design, construction, installation and commissioning of Equipment of a 115 kV or above complete conventional or GIS substation. Bidder shall also demonstrate his capacity to perform Work.

Experience record of the Bidder or either member of the joint venture/consortium, including experience record derived from being a member of other joint venture or consortium in previous project(s) is acceptable, provided that there is a letter from the project owner certifying that the Works as described in c. above were performed by the Bidder or either member of the joint venture/consortium of this project. It is not allowed to combine the experience records of each member of the joint venture/consortium in order to meet the experience requirements.

With respect to item b. and c. above, reference records of either the parent or affiliated companies of the Bidder or of either member of joint venture or consortium shall not be acceptable. If the Bidder has previously formed as the joint venture/consortium with other company and the experience record(s) of the joint venture/consortium meet(s) the requirement set forth herein, such experience record(s) of the joint venture/consortium is(are) also acceptable as the experience record(s) of the Bidder.

- d. 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.d.5 to I.d.7 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 115 kV Ratings of Gas-Insulated Switchgear (GIS). These Equipment shall be manufactured by the qualified manufacturers who shall fulfill the following requirements:

5.1 Having one of the following qualifications:

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

OR

5.1.2 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.

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.

6. For Control and Protection Panel, having the following qualifications:

6.1 Being local manufacturer.

6.2 Having one of the following qualifications:

6.2.1 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 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.

7. For Substation Control and Protection System Integrator

Having one of the following qualifications:

- 7.1 Having successful experience in EGAT's digital substation.

OR

- 7.2 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.5 thru II.d.18 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 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:

5.1 Having one of the following qualifications:

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

OR

5.1.2 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.

- 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.
6. 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:

6.1 Having one of the following qualifications:

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

OR

6.1.2 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 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.
7. For 33, 22 and 11 kV ratings of following Equipment : Metal-Clad SF₆ Gas Insulated Switchgear, Power Circuit Breaker, Instrument Transformer, Disconnecting Switch and Surge Arrester

Having one of the following qualifications:

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

OR

7.2 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.

8. 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

8.1 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.

8.2 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.

8.3 Having one of the following qualifications:

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

OR

8.3.2 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).

9. For Insulator

Having one of the following qualifications:

9.1 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:

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

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

OR

9.2 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).

10. For Stationary Battery

Having one of the following qualifications:

10.1 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

10.2 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).

11. For above 33kV through 115 kV Outdoor Type Cable Termination and Cable Termination for GIS.

Having one of the following qualifications:

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

OR

11.2 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.

12. 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.

13. For Fault Recording System.

13.1 Having one of the following qualifications:

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

OR

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

13.1.2.1 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

13.1.2.2 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.

13.2 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

14. 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.

15. For Merging Unit (MU)

Having one of the following qualifications:

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

OR

- 15.2 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).

16. For Bay Control Unit (BCU)

Having one of the following qualifications:

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

OR

- 16.2 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).

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

18. For Closed-circuit television (CCTV) system and equipment

- 18.1 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.

- 18.2 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.

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

18.3.1 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

18.3.2 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.

18.4 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:

Complete substation: New substation or Extension of the existing substation which comprise of at least one transformer circuit and one line circuit.

All above scope may not be necessary to include the building construction and the civil works by themselves. However, the design, supervision, and execution of the buildings and the civil works shall be required.

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 *hard copy and one (1) electronic copy contained in USB flash drive*, 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 shall be submitted in a separate sealed envelope.

For preparation of original hard copy, each page of the original hard copy shall be marked with the volume number and the page number in the lower right-hand corner, for example, Volume 1 of 10 and Page 1 of 100.

For preparation of electronic copy, each volume of the signed original hard copy shall be scanned into one (1) PDF file and each PDF file shall be named according to the volume number.

The USB flash drive shall contain electronic files of the proposal in the following formats:-

- PDF files of all pages of each volume of the proposal, and*
- Excel files of filled-in Proposal Data, and*
- Excel files of filled-in Price Schedule*

In the event of any discrepancy between the original hard copy and the electronic file(s), the original hard copy shall govern.

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

INVITATION TO BID NO. HSIS-S-03

**SUPPLY AND CONSTRUCTION OF 115 kV SUNGAI KOLOK
SUBSTATION (GIS), IMPROVEMENT OF 115 kV YALA 2
AND 115 kV NARATHIWAT SUBSTATIONS**

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

and shall be addressed and delivered to :

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

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

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

Bids will be opened publicly at *place and* time specified in *Tentative Schedule*.

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

A-7. Availability of Bidding Documents

The Bidding Documents are available for examination *and online purchase at <http://www4.egat.co.th/fprocurement/biddingeng/>* and can be obtained *by downloading via link provided by EGAT* upon payment to EGAT, non-refundable, in the amount of USD 270.- or Baht 8,000.-. These prices include the value added tax.

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 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

- 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.
- 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.



เอกสารไม่ควบคุม
 รับรองสำเนาโดย นพอ.ร. กสส.ร. อวส.
 ก่อนนำไปใช้งาน
 ต้องตรวจสอบ Revision ล่าสุด
 ฝ่ายวิศวกรรมระบบส่ง กฟผ.

4 กรกฎาคม 2568

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

- 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.
- The control and protection panel shall be manufactured and designed by the manufacturer/company written in the same row.



4 กรกฎาคม 2568

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

Bid No. HSI-S-03

เอกสารไม่ควบคุม
รับรองสำเนาโดย ทพอ.ร. กสส.ร. อวส.
ก่อนนำไปใช้งาน
ต้องตรวจสอบ Revision ล่าสุด
ฝ่ายวิศวกรรมระบบส่ง กฟผ.

4 กรกฎาคม 2568

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



เอกสารไม่ควบคุม
 รับรองสำเนาโดย **หนอ-ร.กสส-ร.อวส.**
 ก่อนนำไปใช้งาน
 ต้องตรวจสอบ **Revision** ล่าสุด
 ฝ่ายวิศวกรรมระบบส่ง กฟผ.

SECTION H
SCOPE OF WORK

SCOPE OF WORK

H-1.General

<u>No.</u>	<u>Substation</u>	<u>Page</u>
1.	115kV SUNGAI KOLOK SUBSTATION (GIS)	
	- GENERAL	H1-1
	- ELECTRICAL PART	H1A-1
	- CONTROL AND PROTECTION PART	H1B-1
	- COMMUNICATION PART	H1C-1
	- CIVIL AND ARCHITECTURAL PART	H1D-1
2.	115kV YALA 2 SUBSTATION	
	- GENERAL(NONE)	-
	- ELECTRICAL PART(NONE)	-
	- CONTROL AND PROTECTION PART	H2B-1
	- COMMUNICATION PART(NONE)	-
	- CIVIL AND ARCHITECTURAL PART (NONE)	-
3.	115 kV NARATHIWAT SUBSTATION	
	- GENERAL	H3-1
	- ELECTRICAL PART	H3A-1
	- CONTROL AND PROTECTION PART	H3B-1
	- COMMUNICATION PART(NONE)	-
	- CIVIL AND ARCHITECTURAL PART(NONE)	-

1. 115 kV SUNGAI KOLOK SUBSTATION

GENERAL

The renovation of Sungai Kolok 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 in operation after the completion of new GIS substation.

Sungai Kolok substation is located at Sungai Kolok sub-district, Sungai Kolok District, Narathiwat province.

The renovation of Sungai Kolok Substation consists of the digital 115kV GIS substation with Double Bus Single Breaker scheme.

Schedule 1 : 115kV Sungai Kolok substation

The new 115kV GIS digital substation shall have seven (7) diameters with Double Bus Single Breaker scheme for the following:

- One (1) diameter for 115kV line to Narathiwat substation
(Plug-in 115kV XLPE cable 2x1/C 800 Sq.mm. per phase)
- One (1) diameter for 115kV line to Yala 2 substation
(Plug-in 115kV XLPE cable 2x1/C 800 Sq.mm. per phase)
- One (1) diameter for 50MVA, 115/33kV Transformers KT1A
(Plug-in 115kV XLPE cable 1x1/C 800 Sq.mm. per phase)
- One (1) diameter for 50MVA, 115/33kV Transformers KT2A
(Plug-in 115kV XLPE cable 1x1/C 800 Sq.mm. per phase)
- One (1) diameter for 115kV line to future 115kV Capacitor bank
(Plug-in 115kV XLPE cable 1x1/C 800 Sq.mm. per phase)
- One (1) diameter for 115kV Bus Coupler
- One (1) diameter for 115kV line to SPP
(Plug-in 115kV XLPE cable 1x1/C 800 Sq.mm. per phase)

The contractor shall supply equipment, perform construction and installation work necessary for completion of operation substation in accordance with the contract documents. 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 these bidding 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.

ELECTRICAL PART

Schedule 1 : 115 kV SUNGAI KOLOK SUBSTATION (GIS)

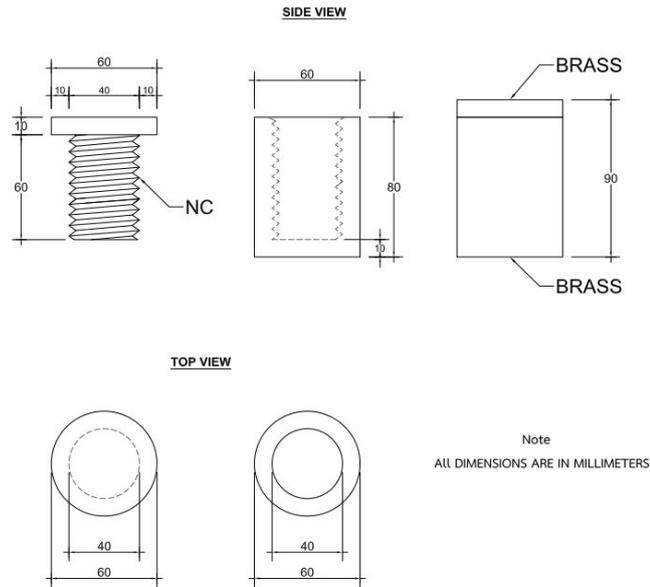
Work included in this contract

The work included in this contract to be performed by the contractor shall be as specified in the contract documents and as follows:

For Electrical work

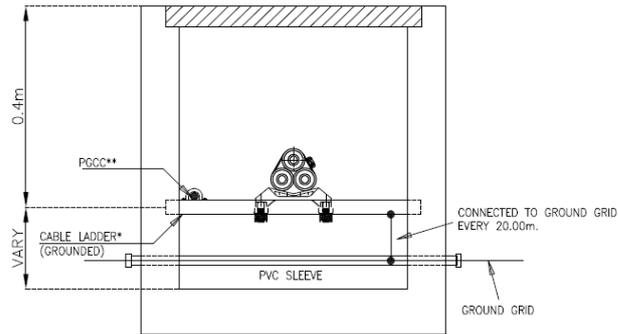
1. 115/33kV Substation

- 1.1 Design, supply and installation of equipment required for a complete new 115kV GIS digital substation.
- 1.2 Design, supply and installation of equipment required for a complete 33kV system including 33 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 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 115kV GIS cable interfaces to 115kV overhead lines (115kV line to Narathiwat, 115kV line to Yala 2 and 115kV line to SPP).
 - 1.4.3 The connection of 115kV GIS cable interfaces to 115kV line to future 115kV capacitor bank.
 - 1.4.4 The connection of the 115-33-11kV power transformers (KT1A, KT2A) to the 33kV switchgears and station service system.
 - 1.4.5 The connection of the 33kV switchgears to 33kV PEA lines and 33kV capacitor banks.
 - 1.4.6 The grounding equipment and miscellaneous hardware for 115-33-11kV power transformers (KT1A, KT2A) 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 buildings. 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 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.
- 1.7 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.
- 1.8 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.
- 1.9 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.
- 1.10 Design, supply and installation of 115kV XLPE cable system which comprises at least the following:
 - 1.10.1 The design and calculation of the 115kV cable system shall conform to IEC and/or IEEE standards. The said calculation shall be submitted to EGAT for approval.
 - 1.10.2 The 115kV XLPE cable shall be single-core with copper conductor.
 - 1.10.3 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.
 - 1.10.4 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.
 - 1.10.5 The minimum bending radius of the 115 kV XLPE cable shall be checked by contractor for cable installation and cable trench design.

- 1.10.6 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.
- 1.10.7 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.
- 1.10.8 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.
- 1.10.9 Design, supply and installation the equipment to protect the power cable from the surge and over-voltage.
- 1.10.10 The abnormal condition which occurs from the design and installation of 115kV XLPE cables for example ferroresonance etc. shall be responsible by the Contractor.
- 1.10.11 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.
- 1.10.12 The position and number of the cable cleats shall be calculated and determined by the contractor to withstand the electromechanical force from short circuit according to IEC standard.
- 1.11 Design, supply and installation of 33kV XLPE cable system which comprises at least the following:
 - 1.11.1 The design and calculation of the 33kV cable system shall conform to IEC and/or IEEE standards.
 - 1.11.2 The 33kV XLPE cable shall be single-core with copper conductor.
 - 1.11.3 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 termination supporting structures, cable terminations, miscellaneous hardware, link box, Sheath Voltage Limiter (SVL) (if applicable) and all related equipment, structures and hardware.
 - 1.11.4 The minimum bending radius of the 33kV XLPE cable shall be checked by contractor for cable installation and cable trench design.
 - 1.11.5 The 33kV XLPE cable shall be installed in **trefoil** formation.



* : DESIGNED BY CONTRACTOR
 ** : PGCC = PARALLEL GROUND CONTINUITY CONDUCTOR (IF REQUIRED)

- 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.
- 1.11.6 The contractor shall design the 33kV cable system and select the type of sheath bonding 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 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 standard. The design report shall be submitted to EGAT for approval. The calculated continuous current rating shall be shown in the single-line diagram.
 - 1.11.7 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 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.
 - 1.11.8 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 **62.5kA** 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 33kV XLPE cables for example ferroresonance etc. shall be responsible by the Contractor.
 - 1.11.11 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.

1.11.12 The position and number of the cable cleats shall be calculated and determined by the contractor to 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:

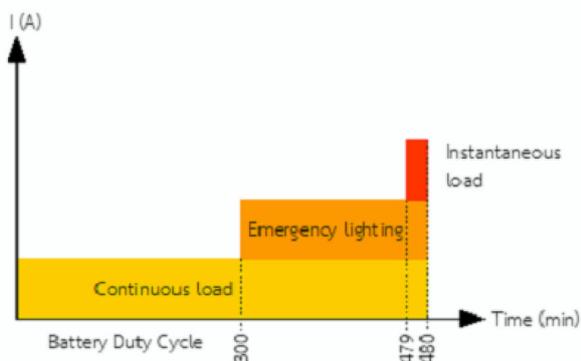
- 300kVA, 33,000-400/230V distribution transformer (KW1A)
- 300kVA, 33,000-400/230V distribution transformer (KW2A)
- Load Center Unit Substation (LCUS)
- 33kV drop-out fuses
- 600V, 500A safety switches
- 33kV equipment, and AC&DC distribution boards, stationary batteries, battery chargers, power cables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

2.2 Design, supply and installation of equipment required for a complete 400/230V power 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, essential load for merging unit and emergency essential load for at least **8** hours if normal station service fails. The capacity of the battery shall not be less than **1200Ah**. 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 existing and future bay 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 and 33kV switchgear building in 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:
- 115kV GIS substation
 - 115kV system
 - 33kV system and the 33kV switchgear system
 - 115kV GIS building
 - 33kV switchgear building
- 3.2 The grounding conductor of the substation grounding system shall be 4/0 AWG bare copper wire type.
- 3.3 The contractor shall design, supply and install the conductor size 2x4/0 AWG bare copper wire type connect from ground grid to steel structure and equipment.
- 3.4 The ground grid conductor spacing under the building area shall be the same as the switchyard.
- 3.5 Design, supply and installation of the grounding system for isolating transformer. The grounding system of the isolating transformer shall be separated from the substation. The calculation shall be submitted to EGAT for approval.
- 3.6 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.
- 3.7 The contractor shall conduct the soil resistivity measurement. The result shall be submitted to EGAT for approval.
- 3.8 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:
- 3.8.1 The maximum ground grid conductor spacing (D0) shall be **4 meters**.
- 3.8.2 The number of ground rod shall be **130 pieces**.
- 3.9 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 (Sf) 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 (D1) is less than the grounding conductor spacing for reference (D0), the contractor shall design a grounding grid by using the software. The certification of software shall be acceptable for commercial use.
- 3.10 The grounding system for the extended area shall be connected to the existing ground grid.
- 3.11 Modification of the existing grounding system (if necessary).

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:

a) 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 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 main 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 power supply, lighting system, lightning protection system, grounding system, power supply, fire alarm and protection system, air conditioning system, ventilation system and telephone & LAN system in GIS buildings 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.

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

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

5.5 The inverter for essential load of merging unit and emergency essential load shall meet the requirement as the table below. The 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		
2	Cabinet			7.1	AC output voltage cls 1.5	YES	
	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	YES	
	2.5 Steel sheet thickness	1.5	mm.	8.4	Overload temperature shut down	YES	
				8.5	Thermistor fan controlled	YES	
					(Inverter will shut down when temperature		
3	Main supply Voltage			8.6	DC circuit breaker	YES	
	3.1 Nominal Voltage	125	V.	8.7	AC circuit breaker	YES	
	3.2 Voltage variation	100-150	V.	8.8	DC input fuse to prevent short circuit current	YES	
	3.3 Permissible ripple voltage on DC	< 5	% Vp-p				
	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	+/- 5	%	10.1	Inverter ON/OFF	YES	
	-At AC input fluctuation +/- 10 %			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	YES	
	4.7 Frequency variable	+/- 0.5	%	10.5	AC output status	YES	
	4.8 Synchronized frequency	+/- 1	% Hz		(LED shall blink when Under/Over voltage +/- 10		
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	%				

6. Telecommunication system

6.1 Design, supply and installation of the telecommunication tower and cable ladder for telecommunication system. The said tower shall be constructed and divided into appropriate portions which are painted white and orange alternately with the top and bottom portions being painted orange. The obstruction lighting system shall be controlled by automatic flash box (AFB) that gives 30-60 flashes per minute. The AFB shall be turned on and turned off by a photo-light switch. The lightning protection for the telecommunication tower shall be calculated and designed by the contractor and the said calculation shall be submitted to EGAT for approval.

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 the grid-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 insulators assembly.
- 8.2 Modification of junction box supporting structures (JB003) for the installation of common cubicle for maintenance (CCM) and outdoor receptacle box (ORB1).

- 8.3 Modification of junction box supporting structures (JB001) for the installation of safety switches.
- 8.4 Modification of BS204 for installation of 33kV power fuses and distribution transformers.
- 8.5 Modification of BS202 for installation of 33kV XLPE cables, 33kV surge arresters and 33kV disconnecting switches.
- 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 at Songkhla substation. Songkhla substation is located at Phawong sub- district, Mueang district, Songkhla province.
- 8.9 Design, supply and installation of the new identification plates for 33kV capacitor banks.
- 8.10 Supply and installation of cabling for control and protection system of 33kV capacitors and transformers “KT1A, KT2A”.
- 8.11 Installation of suspension and post insulators. Supply and installation of all hardware for suspension and post insulator assembly.
- 8.12 Installation of heat shrinkable insulation material for 33kV aluminum conductor between 33kV drop-out fuses and distribution transformers.
- 8.13 Installation of heat shrinkable insulation material for phase spacing distance less than 1.00 m. in 33kV system.
- 8.14 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.

Work not included in this contract

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

- 1. Supply and installation of transformers “KT1A, KT2A” **except** cabling work for control and protection system and grounding system.
- 2. Supply and installation of 33kV capacitor banks **except** cabling work for control and protection system and grounding system.
- 3. Dismantlement, relocation and installation of power transformers “KT1A, KT2A”.
- 4. Dismantlement, relocation and installation of 33kV capacitor banks.
- 5. The stringing work for the connection between the 115kV substations take-off structures and the dead-end towers of the transmission lines.
- 6. Supply station post and suspension insulators.

CONTROL AND PROTECTION PART

Schedule 1 : 115 kV SUNGAI KOLOK SUBSTATION (GIS)

1. **Works Included in This Contract for 115 kV Sungai Kolok 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:
 - o Individual test
This test is to verify each IED performance including IEDs that supplied as spare parts 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.
 - o 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.
 - o Factory Acceptance Test (FAT)
This test is to verify system performance with configured IEDs and Fault Recording System (FRS) which shall comply with EGAT's Specifications as well as the relevant drawings and documents.
 - o 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:
- o Test procedures
 - o All used data such as parameters, standards, and etc.
 - o Test results
 - o 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 be responsible for performing wiring checks to verify that the details of equipment, schematic and wiring diagrams shown in the drawings comply with all IED equipment configurations.
 - 1.8 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.
 - 1.9 The contractor shall be responsible for providing a location with appropriate temperature and sufficient area to accommodate all equipment for the Factory Acceptance Test (FAT).
2. **Works Not Included in This Contract for 115 kV Sungai Kolok Substation**
- 2.1 Supply of EGAT SCADA X software and EGAT gateway software.

COMMUNICATION PART

Schedule 1 : 115 kV SUNGAI KOLOK SUBSTATION (GIS)

The scope of work for the 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 PART

Schedule 1 : 115 kV SUNGAI KOLOK SUBSTATION (GIS)

ARCHITECTURAL WORK

1. Design and construction of
 - 1.1 115 kV GIS and Control 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 and Control Building shall be designed with reference to Sungai Kolok Substation (Dwg.No.SUK-GIS-7-01A) Equipment layouts and cable block out shall conform to electrical drawing Dwg.no.SE-GIS-0-01-01/01 and Dwg.No.SUK-S-7 and Dwg.No.SUK-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-hour 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.
 - Plumbing system for water supply, building drain and vent, storm water drainage including sanitary wares and fittings.
 - Storm 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.
- Hoist crane, for loading area, of lifting capacity not less than 2 metric tons and wireless crane remote control.
- Lightning protection system.
- Emergency lighting system.
- Signboard on building and room name sign on each room.
- 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 and Control Building.

- 1.1.1 Control/Relay area shall consist of Total Flood Clean Agent Fire Suppression System with heat detector, addressable type smoke detector and aspirated smoke detector.
- 1.1.2 GIS area shall consist of optical beam smoke detector.
- 1.1.3 Fire protection system of 115 kV GIS and 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 GIS and Control Building. The installation practice shall be in accordance with the last edition of NFPA 72.
- 1.1.4 There shall be sounder and beacon on the roof of the building.
- 1.1.5 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 ;
Zone 4: Battery Room ;
Zone 5: Cable Room ;
Zone 6: Inert Gas Room
Other zone (If required)

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

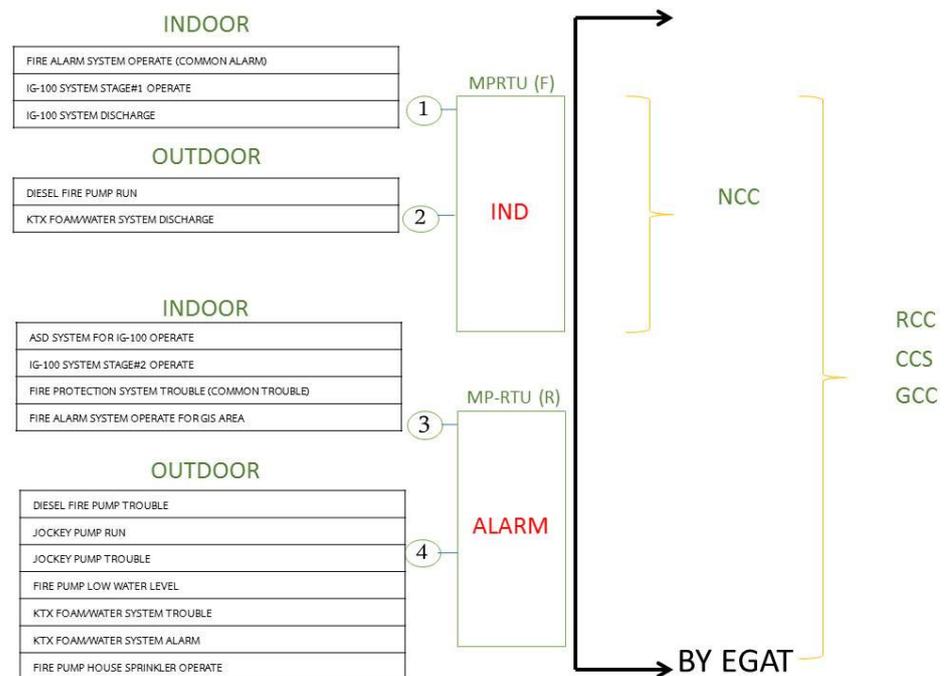
- (6) Detectors shall be cross-zoned detection requiring 2 detectors to be in alarm before discharge. A zone of A or B of addressable smoke detector and a zone C of all ASD shall be crossed.
- 1.1.6 For air sampling smoke detector as shown on specification 3001-10.13.2 part i item no.1, 7, 13 and 14 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.
- 1.1.7 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.
- 1.1.8 There shall be one control panel for which controls fire detection system and IG-100 fire suppression system in the building.
- 1.1.9 There shall be a protective clear polycarbonate cover which can be immediately lifted or opened for all IG-100 manual release stations.
- 1.1.10 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.
- 1.2 Fire protection system for 33 kV Switchgear Building.
- 1.2.1 Switchgear Building shall consist of Total Flood Clean Agent Fire Suppression System with addressable type smoke detector and aspirated smoke detector.
- 1.2.2 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 GIS and 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 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.
- 1.2.5 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.
 - 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
- 1.2.7 There shall be a protective clear polycarbonate cover which can be immediately lifted or opened for all IG-100 manual release stations.
- 1.3 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.
- 1.4 250 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 GIS and Control Building. The installation practice shall be in accordance with the latest edition of NFPA 72.
- 1.5 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. The

graphic annunciator shall display alarm, discharge and trouble signals of fire alarm system of other buildings at the building where control room locates.

- 1.6 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.
- 1.7 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 verifiable 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;



- 1.8 There shall be only one subcontractor engaging in design, supply and installation of Fire Protection System for Buildings and Switchyard.
- 1.9 Water supply system.
- 1.10 All building wall openings for fire protection dampers shall be provided with stainless steel louvers and insect screens to install inside of building.
- 1.11 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 (CO2) 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.
- 1.12 There shall be safety signs for fire extinguisher, manual release station and fire alarm device.
- 1.13 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.
- 1.14 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.
- 1.15 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 500/230/115 kV GIS and Control/Relay Building. One set of laser jet printer shall be provided.
- 1.16 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.
- 1.17 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.
- 1.18 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 Generator Set House	HD
10. Transformer, Shunt Reactor	LHD
11. Cable Spreading Rooms and Cable Tunnels	<ul style="list-style-type: none"> ▪ 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
- 1.19 Pipe coating system shall conform to ASME A13.1 standard and ANSI-A13.1
- 1.20 Underground water piping shall have indicator sign.
- 1.21 For Fire protection system design shall be conformed to NFPA 101 (Life Safety Code).
- 1.22 All junction boxes or electrical equipment in rooms on ground floor shall be 1.2 m higher from room floor elevation.
- 1.23 All firestops for penetration from outside cable trenches to cable room and from cable room to under raised floor area shall be multi cable transit fire stop. Other firestops shall be block type being able to be removed and reinstalled conveniently. Firestop catalog and installation detail drawings shall be submitted to EGAT for approval.
2. Construction of
 - 2.1 Fire pump house.
 - 2.2 Cabinets with 2X50 lbs wheel fire extinguisher.
 - 2.3 Water storage tank for fire protection system (capacity not less than 250 cu.m).
 - 2.4 Underground water tank 50 cu.m.
 - 2.5 Water tank tower 15cu.m.

CIVIL WORK

1. Design and construction of
 - 1.1 Steel structure and/or foundations for Specified equipment and the others not shown in "For Construction drawings" and/or EGAT's specification.
 - 1.1.1 115kV Cable termination foundation.
 - 1.1.2 33kV Deadend structure foundation.
 - 1.1.3 RC Slab for skid base (SK202).
 - 1.1.4 RC Skid base 36/24kV.
 - 1.1.5 RC Slab for skid base (SK201).
 - 1.1.6 Isolating transformer 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 Concrete pole strain bus structure with concrete pole foundation.
 - 1.7 Standard cable trench type"A" 1.00m width with concrete cover and with cleat support.
 - 1.8 Standard cable trench type"A" 0.60m width with cleat support.
 - 1.9 Standard cable trench type"B" 0.60m width with cleat support.
 - 1.10 Hand hole with concrete cover (min. wall 7cm THK.).
 - 1.11 Site office.
 - 1.12 33kV Switchgear building.

1.12.1 Modify structure of CDU area as per Architectural drawing.

2. Construction of
 - 2.1 22/33kV Switchgear building.
 - 2.2 115kV Take-off structure foundation (TS701).
 - 2.3 115kV Take-off structure foundation (TS702).
 - 2.4 115kV Bus support structure foundation.
 - 2.5 115kV Surge arrester foundation.
 - 2.6 115kV Disconnecting switch support foundation.
 - 2.7 22kV Bus support structure foundation.
 - 2.8 Transformer foundation.
 - 2.9 Outdoor marshalling cubicle foundation.
 - 2.10 Disconnecting switch operating platform foundation.
 - 2.11 Junction box structure foundation (JB001).
 - 2.12 Junction box structure foundation (JB003).
 - 2.13 40m Communication tower foundation.
 - 2.14 Lighting relay panel foundation.
 - 2.15 Lamp post for fence and access road lighting LED type foundation.
 - 2.16 Fire wall 8.00m height.
 - 2.17 Details of standard bolts, nuts, ring fillers, spring lock washers.
 - 2.18 ϕ 0.35m and ϕ 0.50m Cast-in-place concrete pile.
 - 2.19 0.18 to 0.40m square reinforced and prestressed concrete piles.
 - 2.20 RC Road.
 - 2.21 Cable trench.
 - 2.22 Crushed rock surfacing.
 - 2.23 Details sump, curb inlet, curb and pipe laying.
 - 2.24 Oil separator.
 - 2.25 Oil containing pit with steel grating and black steel spiral-seam pipes (TIS 427-2531) with protection method according to AWWA C217, C205.
3. The contractor shall remove existing structure with reference to Dwg. No. SUK-C-1, SUK-C-3, SUK-C-6 and SUK-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 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 GIS and 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 YALA 2 SUBSTATION

1. Work Included In This Contract for 115 kV Yala 2 Substation

- 1.1 Design, supply, installation, wiring, test and commissioning of complete control and protection system which comprises at least the following equipment.
 - Swing rack type switchboard panel.
 - E1 Converter panel.
 - Fault recording system and marshalling panel for fault recording system.
 - Loose equipment as specified in price schedules.
 - Related accessory equipment which is required for interfacing between the existing equipment and new equipment.
 - Cable and accessories as well as connection of cables among all the new equipment, the existing panels and the associated equipment in order to complete the function of the control and protection system.
- 1.2 Design, modification, wiring, test and commissioning of the existing equipment which comprises at least the following equipment in order to incorporate the new equipment.
 - The existing panels such as AC/DC distribution boards, existing control and protection panels, marshalling panels, primary equipment, EGAT RTU and Fault Recording System.
- 1.3 Design and modification of the schematic and wiring diagram of the additional and replacement inputs to the existing EGAT RTU, including test and commissioning of the complete EGAT RTU. Providing completed EGAT RTU I/O List in both hardcopy and electronic file.
- 1.4 Design and modification of the schematic and wiring diagrams of the additional and replacement inputs to the existing Fault Recording System (FRS), including wiring, configuration, calibration, test and commissioning of the completed FRS.
- 1.5 Any modification and interfacing works to the existing panels, including supply of related accessory equipment which is required for incorporating the new equipment. The modified existing drawings shall be modified by the Contractor and submitted to EGAT for approval. The final drawings shall be submitted as ACAD files.
- 1.6 The contractor shall be responsible for providing complete schematic and wiring diagrams of the control and protection systems.
- 1.7 The contractor shall be responsible to perform the local, remote and end-to-end function tests to verify that all relay and IED performance complies with EGAT's Specifications and requirements as well as to ensure consistent inter-substation functionality.
- 1.8 Removal of the unused equipment of existing control and protection panel shall be neatly kept in a suitable place recommended by EGAT.
- 1.9 Removal of the unused existing cables. The removed cable shall be neatly reeled and kept in a suitable place recommended by EGAT.
- 1.10 The contractor shall provide the draftsman working at site during the commissioning stage in order to be in charge of writing the As-built Drawings of Control and Protection System.

3. 115 kV NARATHIWAT SUBSTATION

GENERAL

The existing 115kV Narathiwat substation is located in Tambon Lam Phu, Amphur Muang Narathiwat Province. The existing 115kV Narathiwat substation is an outdoor conventional type, with main and transfer bus scheme. The control and protection system shall be improved and upgraded and some 115kV existing equipment shall be replaced with new equipment to successfully connect to Sunghai Kolok Substation (GIS) Substation, which shall be upgraded to digital substation.

The contractor shall supply equipment, perform construction and installation work necessary for completion of operation substation in accordance with the contract documents. 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 these bidding 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.

ELECTRICAL PART

Schedule 3 : 115 kV NARATHIWAT SUBSTATION

Work included in this contract.

The work included in this contract to be performed by the contractor shall be as specified in the contract documents and as follows:

Electrical work

- 1. Conventional substation**
 - 1.1 Design, supply and replacement of CT equipment and structures. The detail of replacement are shown on the bidding document drawing.
 - 1.2 Design, supply and installation of equipment required for a complete upgrade to support a connection to a digital substation.
- 2. Grounding system**
 - 2.1 Design, supply and installation the grounding system of the following:
 - 115kV substation
 - 2.2 The grounding conductor of the substation grounding system shall be of 4/0 AWG bare copper wire type.
 - 2.3 The contractor shall design, supply and install the conductor size 2x4/0 AWG bare copper wire type connect from ground grid to steel structure and equipment.
 - 2.4 Modification of the existing grounding system. (If necessary)
- 3. Other work**
 - 3.1 Design, supply and Installation of the identification plates of all equipment and other necessary plates.
 - 3.2 Design, supply and installation of all hardware for suspension insulator assembly.
 - 3.3 Removal of equipment and support structures in existing 115kV conventional substation. Details of removal are shown on the bidding document drawing.
All removed equipment shall be carefully packed by the contractor and delivered to EGAT at Narathiwat Substation.
- 4. Testing and commissioning**
 - 4.1 Testing and commissioning of all equipment required to make the substation function properly.

CONTROL AND PROTECTION PART

Schedule 3 : 115 kV NARATHIWAT SUBSTATION

1. Work Included In This Contract for 115 kV Narathiwat Substation

- 1.1 Design, supply, installation, wiring, test and commissioning of complete control and protection system which comprises at least the following equipment.
 - Line differential relay for replacing existing main Protective Relay in Panel no. 3R.
 - E1 Converter and accessories.
 - Loose equipment as specified in price schedules.
 - Related accessory equipment which is required for interfacing between the existing equipment and new equipment.
 - Cable and accessories as well as connection of cables among all the new equipment, the existing panels and the associated equipment in order to complete the function of the control and protection system.
- 1.2 Design, modification, wiring, test and commissioning of the existing equipment which comprises at least the following equipment in order to incorporate the new equipment.
 - The existing panels such as AC/DC distribution boards, existing control and protection panels, marshalling panels, primary equipment and EGAT RTU.
- 1.3 Design and modification of the schematic and wiring diagram of the additional and replacement inputs to the existing EGAT RTU, including test and commissioning of the complete EGAT RTU. Providing completed EGAT RTU I/O List in both hardcopy and electronic file.
- 1.4 Any modification and interfacing works to the existing panels, including supply of related accessory equipment which is required for incorporating the new equipment. The modified existing drawings shall be modified by the Contractor and submitted to EGAT for approval. The final drawings shall be submitted as ACAD files.
- 1.5 The contractor shall be responsible for providing complete schematic and wiring diagrams of the control and protection systems.
- 1.6 The contractor shall be responsible to perform the local, remote and end-to-end function tests to verify that all relay and IED performance complies with EGAT's Specifications and requirements as well as to ensure consistent inter-substation functionality
- 1.7 Removal of the unused equipment of existing control and protection panel shall be neatly kept in a suitable place recommended by EGAT.
- 1.8 Removal of the unused existing cables. The removed cable shall be neatly reeled and kept in a suitable place recommended by EGAT.
- 1.9 The contractor shall provide the draftsman working at site during the commissioning stage in order to be in charge of writing the As-built Drawings of Control and Protection System.