خدمات الملاحة الجوية السعودية
Saudi Air Navigation Services

Remote Sites Fencing Renovation Phase 2

RFP

2025

Prepared by

ENGINEERING SERVICES DIRECTORATE - EEB

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1. GENERAL STATEMENT OF WORK (GSOW)

1.1 OVERVIEW

This project aims to replace the existing deteriorated fences with new ones that comply with SANS standards. These sites are in different regions in the Kingdom of Saudi Arabia, totaling 8 locations. Details of these locations will be explained in the table below:

#	Sector	Site	System	Location
1	WPS	Rabigh	VOR_DME	22°47'30"N 39°05'49"E
2	CPS	Bopan	VOR_DME	27°03'14"N 45°26'42"E
3	CPS	Riyadh	Raytheon radar	24°58'53"N 46°43'43"E
4	MPS	KHAIBAR	RCAG & MSSR	25°41'53"N 39°17'50"E
5	MPS	BIR DARB	VOR_DME	24°19'50"N 41°49'28"E
6	MPS	HALAIFA	VOR_DME	26°26'02"N 39°16'08"E
7	WPS	YANBU	RCAG	24°08'24"N 38°01'47"E
8	NPS	Al-Jouf	RCAG	29°47'22"N 40°05'53"E

The Contractor's Scope of Works design, supply, installation, & of the following, but shall not be limited to:

1. Excavation, formwork, 1000 mic PVC water barrier, Bitumen coating, Backfilling, and epoxy coating of the surface.
2. Design & Construction of the RCC Foundation for the fence as per design on compacted soil with lean concrete including.
3. Supply, delivery & installation of security Chain link Steel Fence covered by barbed role at top with Y-ties & 6 m wide double leaf steel gate.
4. Preparation and submittal of shop drawings, as-built drawings, the submittal shall be approved by SANS.
5. Security Signage.

1.2 PROJECT STAGES

This Sub-section includes a detailed background of the project process and all the required actions needed by the bidders since launching the RFP to the project's handing over to the project's owner.

1.2.1. Site Survey

Bidders must conduct a site survey for sites prior to bidding to have a clear idea and match this SOW to the real environment of the work (any missing items from the RFP or BOQ that are required to complete the project must be raised during the bidding phase prior to bid submittal). Also, shall assist them to estimate the costs that may vary according to the site nature. There are some restrictions and procedures for site survey gate passes that must be complied with and followed by the contractors to avoid any disturbance since SANS's sites are very sensitive and directly serving the air transportation of Saudi Arabia. These are the steps for requesting a gate pass that shall be applicable until the end of the project.

A. Any site visit without SANS representative is NOT ALLOWED.
B. Any gate pass request shall be submitted before seven working days from receiving the documents for entry permits to persons, materials, and tools.
C. Required documents will be specified by SANS.

- Copy of the ID (Iqama or national card).
- Copy of personal photo with a white background.
- Print Muqeem (for Non-Saudi).
- Copy of Passport (for Non-Saudi)
- Picture of Tools & Materials.
- List of Tools.
- List of Materials.

D. If any more documents are needed, the site visit requester will be notified immediately.
E. Some nationalities are banned from entering some sites. Some other nationalities depend on the location also.

1.2.2. Request for Information (RFI)

Bidders shall directly contact the project manager through Contract Department by emails, meeting, calls, or conference calls during the bidding phase to clarify or provide the requested information that needed by the bidder.

1.2.3. Bidding Closing Date

This date is stated in the contracting section. Any Submittals after the closing date shall not be considered as part of the submittal and the bidder will be evaluated based on the documents that are received prior to the bid closing date.

1.2.4. Required Bidding Submittal Documents

This list of documents is mandatory to be submitted by bidders. Offers evaluation will be based on completion of these documents. Which are:

A. Relevant experience in KSA experience in electrical works installation and cables tracing special equipment at least 5 yeas experiences.
B. KSA experience in security projects.
C. Company Profile.
D. Bill of quantity.
E. Warranty period and conditions.
F. Work method of statement.
G. Preliminary design & solution.
H. Datasheet for all components.
I. Project Management Plan including organization structure including project team & their CV's and certification.
J. Quality Plan.
K. Safety & Security plan
L. Preliminary time schedule with an assumed T0 starting date detailed and includes all the activities until the project is over in MS project format.
M. Logistic plan
N. Compliance matrix.

Furthermore, the bidder shall present his submittal in five separate volumes. Each volume shall focus on one area of project implementation activity:

1. Formal Documents.
2. Cost Proposal.
3. Management Proposal
4. Technical Proposal
5. Executive Summary

To further facilitate the evaluation procedure the bidder shall provide a separate complete consolidated list of proposed deviation from the requirements. SANS reserves the right to disqualify or reject any tender for not complying with this requirement.

The bidder shall notify SANS if he considers that a certain function or any other requirement requested implies an unfavourable balance between cost and value.

A description of the equipment and facility with drawings/diagrams, specifications, calculations, etc., which might be necessary for the evaluation of the tender, shall be included as part of the proposal. Other supporting materials i.e., photographs may be included.

1.2.5. Proposal Structure

The Proposal for section project shall consist of five (5) bound Volumes, bearing the following titles:

Volume I: Formal Documents: Company profile, relevant experience.

Volume II: Cost Proposal (Bill of Quantities & Prices)

Volume III: Support, Management and Quality Control Proposal

Section A: Management: Company structure, Manpower CVs, Define Manpower with their certificates.

the bidder shall present in a matrix form the expected or planned distribution of responsibilities during project implementation, between him as a prospective contractor, his partner(s) and his sub-contractor(s), whichever of these expected situations is applicable. This shall include the supply and installation. The bidder shall clearly show the systems, sub-systems, equipment, parts, and services, which will be supplied by the partner(s) and the sub-contractor(s).

Section B: Quality Control Program Plan: Quality Control Measurements, Verified Deliverables, Work Performance Information, Quality Metrics (Acceptance criteria).

Section C: Training

Section E: Logistics

Section F: Security and Safety plans

Section G: Time Schedule

Volume IV: Technical Proposal

Volume V: Executive Summary: The Executive Summary is a one-page document that summarizes the purpose, goals, and approach of your design project. Reading this summary should give any evaluator a clear idea of the problem you are tackling, your approach to solving it and roughly where you are in the process. Consider it an abstract or overview of your project. The bidder must provide all Volumes divided into Five (5) sections from "1" through "5" as described above, each section shall be labelled separately, and should include in detail all the requirements described and stated in 1.2.5.

The bidders shall submit each volume in softcopy).

Note:

- volumes can be provided in English only.
- All pages of the proposal shall be signed and stamped by the bidders.
- All softcopy submittals shall be in PDF format with a search feature.

1.2.6. Time Schedule

This Sub-section and the following will be after awarding the contractor of the project. Firstly, the contractor shall submit the time schedule of the project. The duration of execution is no more than (6) months. In case of crisis or unexpected conditions, contractor shall inform SANS officially ahead of time.

1.2.7. Design Reviews

The Design Reviews consist of the following:

1.2.8. Preliminary Design Review (PDR)

The bidder shall propose to submit complete preliminary design drawings. The preliminary design drawings shall include, but shall not limited to, preliminary sketches, block diagrams, interfaces, small-scale schematic plans, elevations, sections, rendering, conceptual diagrams,

and other graphic and written documents that illustrate the general scope, scale, and relationship of project components, and describe in general the type of construction and equipment proposed. These drawings shall describe the size, shape, volume, spatial relationships, and functional characteristics of project components.

1.3 ACCEPTANCE TESTS PLAN

The Bidder shall propose to keep a Comprehensive Acceptance Test Plan, which includes Test Documentation; Test Plans; Test Procedures, and Test Reports, following the contractual requirements. The test plans shall be sent to SANS for approval. The Acceptance Tests Plan shall also include:

a. A list of systems, subsystems, modules to be tested.
b. A list of the types of tests to be conducted e.g.:

   i. QA/QC (Inspections, tests)
   ii. Site Acceptance Tests procedure

c. Cross-reference for specification and requirements verification to show compliance of the performance requirements.

The Acceptance Tests shall enable SANS to ensure that all the requirements are met, and the required level of performance has been reached. The Bidder shall propose to carry out Acceptance Tests, with the participation of SANS representatives following an approved Acceptance Tests Plan.

The approved Acceptance Test Plan procedures by SANS are intended to verify that the equipment, as specified in each item of the Contract, run and comply in accordance with the SANS approved Technical Specifications Requirements.

Additionally, all Tests shall be prepared and kept by the Contractor.

1.3.1. Pre-Termination Acceptance Tests (Pre-SAT)

The bidder shall propose to conduct Pre-termination tests on all equipment before inviting SANS for the SAT **(**To be carried out by contractor **ONLY)** as a qualification test, that shall prove design integrity, proof of design principles, and all operational and performance requirements to be met.

The bidder shall propose to provide SANS with the Pre-SAT results documents, including any modifications, which shall be treated by SANS as the reference for the Site Acceptance Tests results evaluation.

1.3.2. Site Acceptance Tests (SAT)

The bidder shall propose to conduct Site Acceptance Tests (SAT) on the complete system with the participation of the SANS representatives. The Site Acceptance Tests shall follow the Installation and Integration Tests at the site.

The contractor shall propose to submit all Test Procedures to the SANS for review and approval prior to conducting tests. Prior to the resumption of SAT, SANS may request added tests deemed necessary for a comprehensive SAT, to be conducted during the SAT.

The tests procedures, and test data sheets shall be prepared and conducted following SANS General Specifications for Testing Equipment and System. Specified data for all conducted tests shall be provided at time of acceptance.

The contractor shall propose to carry out and supply the following for the SANS approval prior to the commencement of SAT:

1. Closure of all SANS outstanding observations, comments, and remarks
2. Records of all changes and modifications made to any of the deliverables.
3. Availability of all approved test documentation.
4. Availability of all as-built drawings.
5. Site Acceptance Tests reports shall show the results of required SATs and compliance with approved procedures, certified by the Contractor or the testing agency.

The Site Acceptance Tests shall be the basis for the Provisional Acceptance of the Contractor's provided. By the end of the SAT SANS project manager shall decide to perform the provisional acceptance or cancel it in the light of the SAT results.

1.3.3. Final Site Acceptance

At the end of the period of warranty stipulated in the Contract, the bidder shall apply for the commencement of the Final Site Acceptance.

The SANS will meet a committee composed of representatives of all affected parties to inspect the work. If, after investigation of the Work, the Final Site Acceptance committee decided that the work is satisfactory SANS shall issue a Final Site Acceptance Certificate.

However, if the committee finds any defects or deficiencies in the work, the SANS representative will give the bidder necessary instructions for required corrective action, and the bidder shall at once comply with, and execute such instructions. Upon correction of the Works, another

inspection will be made, which shall be the Final Site Acceptance Inspection, supplied the works have been satisfactorily completed.

1.4 HELTH AND SAFETY PLANS

Adequate provisions shall also be included for ensuring the health and safety of personnel from the hazards of moving machinery, high voltages, high intensity RF radiation and X-Ray. Necessary indicators and alarms shall be supplied to show the status of working or faulty conditions of equipment. All protection and safety devices shall, as far as possible, be within the fail-safe principle. The contractor shall apply the safety requirements mentioned on SANS-HSE-REQ-01 form.

As a minimum, the following provisions shall be made for the health and safety of operating personnel:

1. Safety shields shall be provided over all moving parts in which personnel could become entangled or caught.
2. No sharp-edged steel sheet, overlapping/nails etc. shall be there inside the site that may cause injury.
3. The workers shall always adhere to the safety kit and procedures while working on the site.
4. A safety officer must be present during the execution.
5. Safety Requirements for Projects Manual.

Whenever is needed, the Contractor must fill and submit the following: -

- Safety Case.
- Safety Plan.

1.5 Delivery & Installation:

The bidder shall handle delivery and installation of replacement spare parts.

1.6 Authoritarian:

The bidder shall be authorized by Saudi Civil Defense.

1.7 Transportation:

The bidder handles transportation of their employees, tools, and materials to sites all over the kingdom.

1.8 PROJECT ENGINEERING DRAWINGS

1.9.1. Final Design Drawings

The bidder shall propose to send complete final design and detailed drawings based on the reviewed/corrected preliminary design drawings for all parts of the work in enough details to enable the SANS to check conformity with the contract requirements. The bidder shall begin work only when the SANS has approved the complete drawings.
One copy of prints of the drawings shall be kept by the bidder, which shall always be available at site for inspection and use by the SANS representative or any other person authorized by the SANS.

1.9.2. Shop Drawings

The bidder shall submit complete shop drawing and detailed drawings at pre-execution phase according to the approved design by SANS.

1.9.3. As-Built Drawings

The Bidder shall always submit three (3) hardcopies and softcopy (in both AutoCAD and PDF formats) sets of labels “As-Built” status drawings/documents (Architectural, Civil, Electrical, Mechanical &Electronic) drawings for reference purposes by the SANS representative.

The Bidder shall submit upon completion of installation and prior to Site Acceptance Tests (SAT), submit marked-up copies of all installation drawings and with “AS BUILT” status.

As-Built drawings shall be submitted as follows:

- Submit, at least, three copies to the SANS, one copy shall be returned with the SANS approval or instructions to change.
- Re-submit (if there were comments to address), unless SANS confirms in writing that this is not necessary.
- Submit copies of the approved version of As-Built drawings to the SANS.
- The contractor shall comply with the SANS as-built drawings Standard (SANS-ESD-TS-19)
- The drawings shall be prepared using the latest version of Auto Cad, or equivalent approved program.

As-Built drawings shall be submitted on a continuous basis. Failure to submit marked up As-Built information will be considered as non-compliance with the Contract requirements.

1.9 PROJECT ENGINEERING DATA

1.10.1. Equipment Specifications

The bidder shall send complete product specifications. Typical product specifications are listed under the Specific Statement of Work. Additional specifications shall be approved by the SANS and commitments and services. Also, datasheet of all equipment needs to be submitted and approved by SANS.

1.10 ACTIVITY REPORTS

In addition to the reports required by the contract Documents Required List (CDRL) documents, the bidder shall state commitment to submit the following reports in a format acceptable to SANS. The reports shall be sent in soft and hard copies, and shall include, as a minimum, the information described below:

1.12.1. Damage/Lost Report

All materials damaged or lost while in Contractor's possession shall be reported to SANS representative on a Damage/Lost Report. This report shall show the measures to be taken to secure timely repair or replacement at Contractor's expense.

1.12.2. Weekly Progress Report

The bidder shall propose to submit to SANS an executive Weekly Progress Report showing, as a minimum, the following:

1. Labor force working during that period.
2. Quantity and type of materials and equipment used during that period including safety equipment such as safety shoes, helmets, etc.
3. Quantity of work executed.
4. Climatic conditions with special reference to any direct effect they may have had on the works.
5. Unforeseen circumstances (if any) which may hamper the progress of the Works.
6. Graph showing the relation between the executed portions of the works and corresponding portions in the Works Program.
7. List of action items.

8. List of correspondence.
9. Open issues.
10. Updated Project Schedule
11. Updated Invoicing Plan
12. Other related issues

SANS form will be sent to contractor to fill it.

1.11 PAYMENT METHOD

NO.	Description	Payment
1	Design Review	20%
2	Delivery	40%
3	Handover	40%

1.13.1. General

Payments shall be made to the contractor after finishing of the phases mentioned in the next sub-section. Contractor shall submit his invoice after the phase is completed and approved by SANS project manager. The original invoice must be handed directly and must include all information as per contracting department requests such as:

- Total contracting price.
- Percentage and amount of accomplished work.

1.12 EXECUTION

1.14.1. Preparatory Works

The bidder (contractor) shall commit to supplying the required transportation, travel and living accommodations for his personnel and ensure that Sub-contractors do the same for their personnel and when required performing the work.

The bidder shall prepare detailed procedures covering execution of all phases of the work and distribute the provisions of the contract, and his own procedures to all his sub-contractor(s).

1.14.2. Proposed Installation Plan by SANS:

Contractor can change this plan according to his assessment and the workshop with SANS, Contractor installation plan.

1.14.3. Contractor Responsibility:

- The bidder (contractor) handles issuing permits after signing the contract for his team and equipment.
- The bidder (contractor) shall secure the materials from any damage before and during the installation.
- The bidder shall state readiness to be solely responsible for the care and protection of all existing utilities, structures or installations and property in general and shall repair such existing structures at his cost if damaged by him.
- The bidder shall state readiness to limit his use of the premises to the work indicated in this contract.
- No persons will be admitted to the SANS premises without the express permission in writing of the responsible authority.
- The bidder shall use a cable detector before excavation works.

Assign site engineer to fulfil with all project elements and to be at the project site during execution. The site engineer will be a focal point between SANS and contractor.

1.13 General Specifications: -

1.15.1. GACA Orders: -

GACAR Part 173 Aeronautical Telecommunications Services.

1.15.2. SANS General Specifications

GS-1	Program Management and Administration
GS-2	Quality Assurance Programs
GS-3	Reliability, Maintainability and Availability Program
GS-4	Configuration Management

GS-5 Principles of Design for Electronic Equipment and Systems

GS-6 Engineering Drawings

GS-7 Engineering Data

GS-8 Publications, Manuals, and Documentation

GS-9 Systems Software Development and Testing.

GS-10 Hardware/Firmware Testing of Equipment and Systems.

GS-11 Acceptance Requirements

GS-13 Site Survey

GS- 12 &14 Civil Works and Engineering Services

GS-15 &16 Integrated Logistics Support

GS-17 Maintenance Program

SANS-ESD-TS-19 As-Built Drawings Standard

SQE-HSE-PSR-001 Safety Requirements for Projects

SANS Power Configuration Manual

1.15.3. General Specifications: -

- Saudi Building Code- General (SBC 201)
- Saudi Construction Code (SBC 301-306)
- Saudi Electrical Code (SBC 401)
- Saudi Mechanical Code (SBC 501)
- Saudi Energy Code (SBC 601-602)
- Saudi Sanitary Codes (SBC 701-702)
- Saudi Fire Code (SBC 801)
- ANSI/ BICSI 002-2014
- NFPA 70® National Electrical Code®.
- NFPA 70E® Standard for Electrical Safety in the Workplace®.
- NFPA 780 Standard for the Installation of Lightning Protection Systems.
- NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems
- Occupational Safety and Health Administration (OSHA)
- ICAO Doc 9157 (Aerodrome Design Manual - Part 5 — Electrical Systems)

- NEC National Electrical Code
- SANS Security Program.
- Safety requirements.
- SANS Security Management System (SeMS)

1.15.4. Related Specifications: -

- **ASHRAE** American Society of Heating, Refrigeration and Air-conditioning Engineers
- **ASTM** American Society for Testing of Materials
- **ARI** Air conditioning and Refrigeration Institute
- **IEEE** Institute of Electrical and Electronics Engineers
- **ISO** International Standard Organization (ISO 9000)
- **NFPA** National Fire Protection Association
- **SASO** Saudi Arabian Standard Organization
- **UBC** Uniform Building Codes
- **SBC** Saudi Building Code.
- **OSHA** Occupational Safety and Health Administration
- **SeMS SANS** Security Management System.

2. TECHNICAL REQUIREMENTS

2.1 Project Elements for Remote Sites Fencing:

AEROSOL SYSTEM:

The Contractor's Scope of Works design, supply, installation, & of the following, but shall not be limited to:

1. Excavation, formwork, 1000 mic PVC water barrier, Bitumen coating, Backfilling, and epoxy coating of the surface.
2. Design & Construction of the RCC Foundation for the fence as per design on compacted soil with lean concrete including.
3. Supply, delivery & installation of security Chain link Steel Fence covered by barbed role at top with Y-ties & 6 m wide double leaf steel gate.
4. Preparation and submittal of shop drawings, as-built drawings, the submittal shall be approved by SANS.
5. Fencing Work:
   5.1 Durability Performance
   - Fence panels, and associated components, shall be galvanized in accordance with ASTM A641 requirements then fusion bond/polyester coated in accordance with ASTM F668. Galvanizing shall be applied after welding.

- Terminal posts, corner posts, line posts, support braces, brace post, top rail, truss rods to be internally and externally galvanized in accordance with ASTM F1043 and then fusion bond/polyester coated internally and externally in accordance with ASTM F668.
- A minimum coating thickness of 350micron shall be applied.
- The fence concrete base shall be designed based on environment condition and to prevent underground penetration.
- Concrete shall have a minimum 28-day compressive strength of 28 MPa (4000 psi). Cement shall be type V sulfate resistant.

5.2 Fence Fabric:

- The fence shall be a minimum of 3m in height.
- Fabric shall be vinyl-coated chain link with a typical 55 mm diamond mesh. The standard length of roll shall be 15m, or greater, and shall be woven continuously without splices.

5.3 Rigid Welded Mesh:

- The use of Rigid Welded Mesh fence is optional. In case this type of fence is selected, materials shall be uniform and consistent, conform to ASTM F2453.
- For RWM panels, after manufacture the entire panel shall be zinc-coated by a hot-dip galvanizing process to cover all weld locations.
- Panels shall be secured using bolts (min 5mm or 6mm thick), nuts and washers for fixing to be anti-tamper and made from Grade 316 or 304 Stainless Steel or hot dip galvanized.

5.4 Visibility Index:

The Visibility Index may not exceed 45%.

5.5 Post Installation:

- All line posts shall be equally spaced at 3m intervals or less.
- Posts to be coated both externally and internally.
- The top of the installed post shall be covered with a cap that is secured using either a pop rivet, screw, or bolt.

5.6 Razor Tape:

- Razor Tape (i.e. concertina) materials and configurations shall be in accordance with ASTM F1910.
- Razor tape shall typically be 600 mm diameter (+ 50 mm). Each loop shall consist of 24(+1) clusters of four needle-sharp barbs on 100mm centers, each barb measuring a minimum of 30mm in length.

5.7 Barbed Wire:

- Six strands of barbed wire shall be installed to secure the razor tape installed on top of the fence.
- Strands shall be spaced uniformly and attached to frame with bands, clips, or eyebolts.
- The strands of barbed wire shall be stretched to remove sag and be anchored firmly to extension arms.
- The strands of barbed wire shall be stretched to remove sag and be anchored firmly to "Y" shape extension arms.

5.8 Alignment & Terrain Profiling:

A reasonably smooth profile at the fence line shall be provided. The bottom of the fence shall not be more than 20 mm above the finished ground line.

5.9 Fence Penetrations:

- In case of under fence penetrations, the opening shall be sealed on both sides with bars and a collar to prevent ingress of humans or small animals.
- In case of through fence penetrations, the fence height shall be increased to maintain 3 m fence height over the top of the penetration and subject to risk assessment.

5.10 Clear Zone:

- A 6-meter clear zone shall be located on both sides of the fence. The clear zone refers to an area, adjacent to the perimeter boundary, cleared of all vegetation & obstructions (including debris) and maintained in this state. It shall be graded to direct water away from the boundary.
- If a facility located in coastal areas the required clearance distance shall be 60m which will include the outer patrol road clearances.

5.11 Patrol Roads:

Patrol roads shall cover the whole perimeter and it be level, a minimum of 4.6-meter wide and paved (Concrete or asphalt) to ensure road is passable under all weather conditions.

5.12 Auxiliary Gates:

- It shall consist of steel gates that can be used to close selected entry or exit lanes or to close all lanes when they are not needed.
- The auxiliary gates shall be at least 3m high and shall be able to cover all lanes. Also, shall be designed to allow entrance and exit of emergency and rescue vehicles.
- Clearance between the bottom of the auxiliary gate and the road surface shall at no point be more then 50mm.

5.13 Fence Gate Specification:

The total width of the fence gate will be minimum 6M (double leaves) with 3 M height. In addition to Fence standards that are mentioned above, to include the Nitro Prime

Zinc rich epoxy zinc primer, and the necessary Reinforced Concrete Columns and all supporting hinges, anchors, etc.

6. Security Signage:

All SANS sites shall have security signage especially the critical sites that will be designed and determined during site survey and design phases.

3. BILL OF QUANTITY

S.NO.	DESCRIPTION	UNIT	QTY	UNIT PRICE	T/PRICE
1	Excavation, formwork, 1000 mic PVC water barrier, Bitumen coating, Backfilling, and epoxy coating of the surface.	Job	8		
2	Design & Construction of the RCC Foundation for the fence as per design on compacted soil with lean concrete including.	Job	8		
3	Supply, delivery & installation of security Chain link Steel Fence covered by barbed role at top with Y-ties & 6 m wide double leaf steel gate.	Job	8		
4	Supply, delivery & installation of barbed role between of the old and new fence.	Job	8		
5	Supply, delivery & installation of security Signage.	Job	8		
6	Submittal of as-built drawings as per SOW.	Job	8		
			TOTAL		