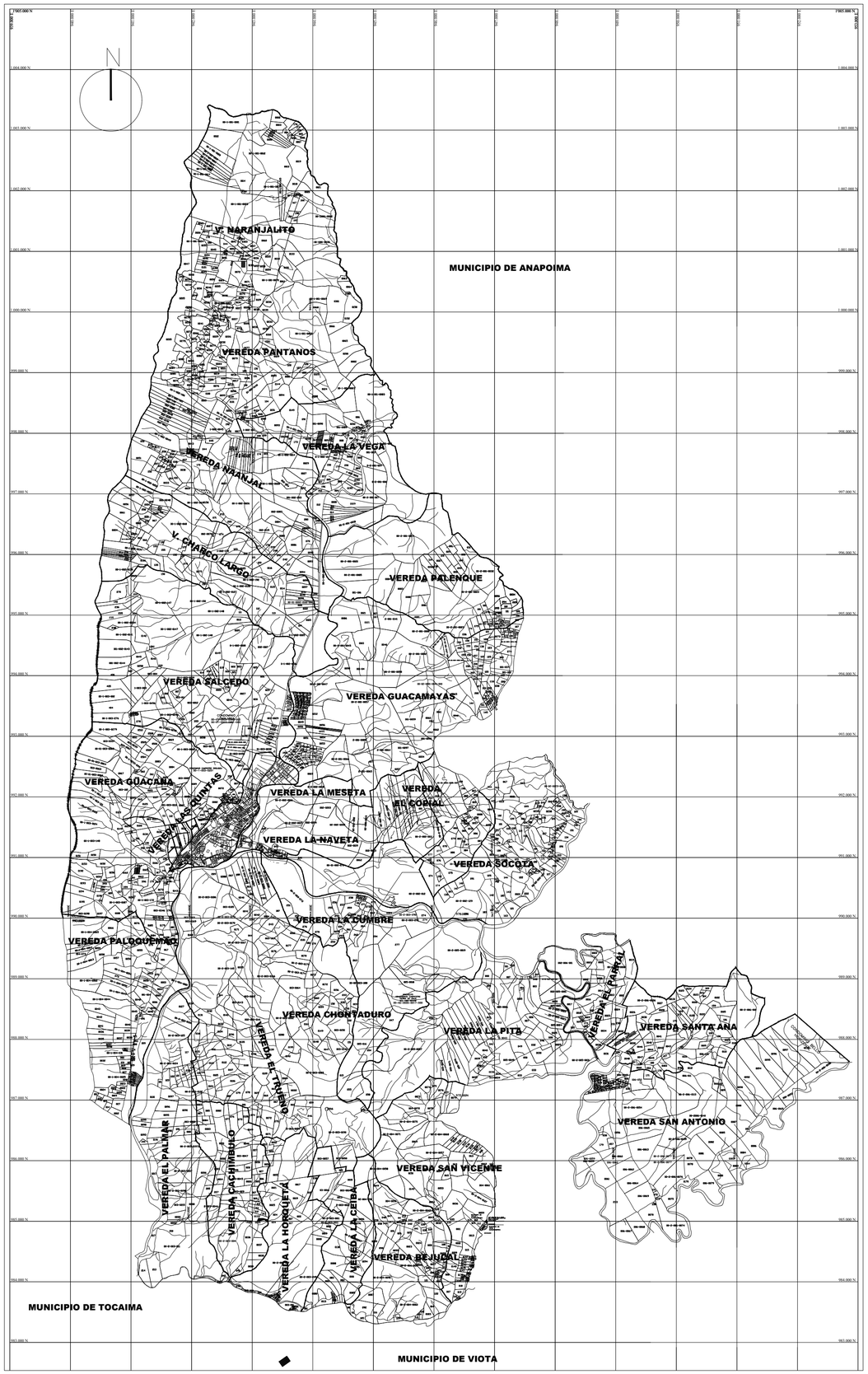


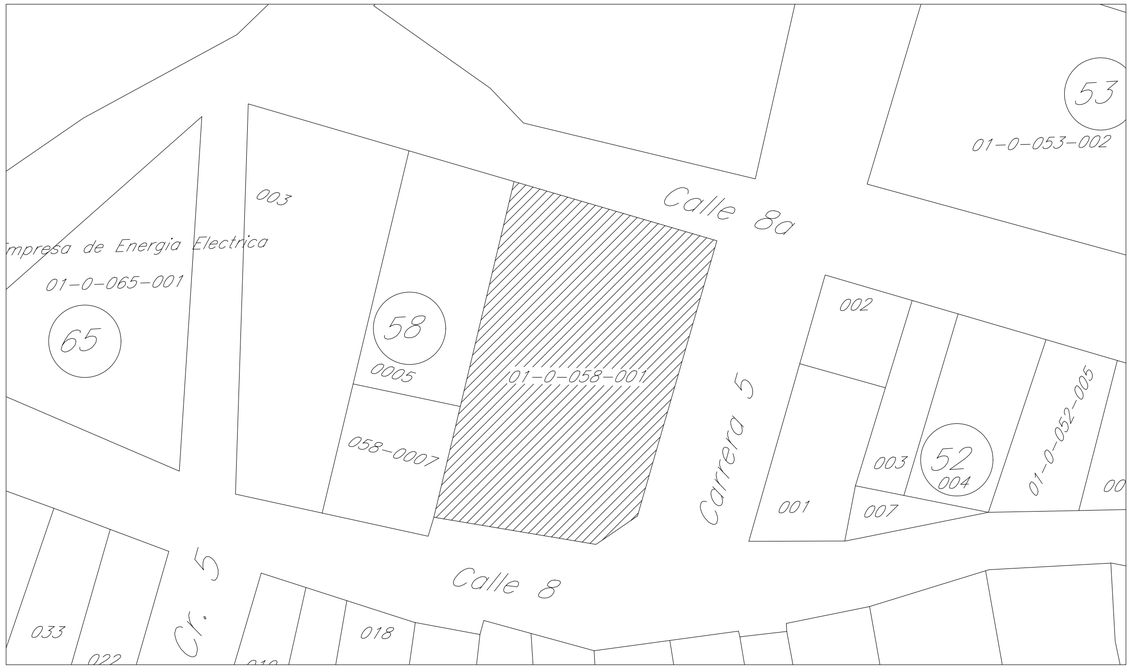
LOCALIZACION MUNICIPAL APULO CUNDINAMARCA

ESCALA: 1:25000



PLANTA CASCO URBANO MUNICIPAL APULO CUND.

ESCALA: 1:5000



PLANTA LOCALIZACION PUNTUAL-PREDIAL PISCINA MUNICIPAL

SIN ESCALA

REPUBLICA DE COLOMBIA
DEPARTAMENTO DE CUNDINAMARCA
MUNICIPIO DE APULO
NIT.:890680236-7

PROYECTO

CONSTRUCCIÓN DE CENTRO DEPORTIVO DE NATACION MUNICIPAL DE APULO, CUNDINAMARCA

LOCALIZACION

CR. 5 N°8-27 BARRIO CENTRO
N° CATASTRAL 25599-01-00-0058-0001-000
M. INMOBILIARIA N° 166-104630

VoBo

JOSE IGNACIO SANTOYA CHAPARRO
ALCALDE MUNICIPAL

VoBo

ING. JOHANA PAOLA CASALLAS RODRIGUEZ
SECRET. DESARROLLO SOSTENIBLE

DISEÑO

ARQ. JULIO ENRIQUE JIMENEZ VIEIRA
M.P 25700-43774

APROBACIÓN
SECRET. DE DESARROLLO SOSTENIBLE

PLANOS DE REFERENCIA

CONTIENE
LOCALIZACION

ESCALA	FECHA
SIN ESCALA	01.2025
ARCHIVO	FECHA DE COPIA:
A-PP001.DWG	01.2025
DIBUJO	ELABORO
JEJV	JEJV

REVISIÓN:	PLANO No:	PLANO No:
	L-001	1
		OE: 1

INFORME TÉCNICO DE GEORREFERENCIACION DEL PROYECTO CONSTRUCCION DE COMPLEJO RECREO – DEPORTIVO – CULTURAL CENTRO FELICIDAD, MUNICIPIO APULO, CUNDINMARCA

DEPARTAMENTO DEL CUNDINAMARCA

MUNICIPIO DE APULO

ALCALDIA MUNCIPAL



DANIEL IVAN SANTOS CERQUERA
C.C 11320031
T.P 01-18631

SEPTIEMBRE 2025

1 INTRODUCCIÓN

DESCRIPCION DEL PROYECTO

En este informe se halla detallada la metodología utilizada en el levantamiento topográfico planimétrico, altimétrico para el proyecto: **CONSTRUCCION DE COMPLEJO RECREO – DEPORTIVO – CULTURAL CENTRO FELICIDAD, MUNICIPIO APULO, CUNDINMARCA**

Se realiza el levantamiento topográfico el método RTK (Posicionamiento en tiempo Real, tomando como base una placa hallada en sitio, a la cual se le obtuvieron coordenadas navegadas con los equipos GNSS con precisión milimétrica marca FOIF A 90.

Para el proceso de Georreferenciación, se utiliza el sistema de Posicionamiento satelital (G.P.S), en modo estático con precisión milimétrica con procesamiento diferencial y postproceso, a dos (2) puntos topográficos base denominados **GNSS01** y **GNSS02**. Al obtener los datos se realiza el postproceso obteniendo las coordenadas reales de los puntos, para posteriormente ajustar el levantamiento realizado en rtk a estos dos puntos ya georreferenciados y así obtener las coordenadas reales de todo el proyecto.

Se finaliza con la procesada de la información y la realización de los respectivos informes.

2 LOCALIZACIÓN

El proyecto se encuentra ubicado la zona urbana del municipio de Apulo departamento de Cundinamarca, en la dirección Carrera 5 N° 8-27 Barrio centro.

Imagen 1. Fotografía Aérea del proyecto.



ESTUDIO TOPOGRAFICO

Debido que en la zona del proyecto no existen puntos geodésicos de la red pasiva del IGAC y teniendo en cuenta que en topografía existen varias metodologías para trasladar coordenadas de puntos georreferenciados certificados por el IGAC a puntos del proyecto, se determina por el sistema de Posicionamiento satelital (G.P.S) con equipos de alta precisión de doble frecuencia en modo estático diferencial y precisión milimétrica con postproceso, tomando como base la estación activa de la Red Geodésica Nacional (**ABPD**) del Acueducto y Alcantarillado de

Bogotá, ubicada en Bogotá-Cundinamarca y la estación activa de la Red Geodésica Nacional (**IBAG**) del Instituto Geográfico Agustín Codazzi, ubicada en Ibagué-Tolima. Calculando los tiempos de recepción empleando la ecuación t = 65 + (3 min x (d – 10)), donde d es la distancia que separa la estación MAGNA ECO del punto materializado como topográfico base.

Se materializaron dos (2) puntos topográficos base, mojones en concreto con placas en aluminio, marcadas en bajo relieve con información del proyecto, para el proceso de georreferenciación, denominados GPS1 y GPS2.

EQUIPOS TOPOGRAFICOS

Para el proceso de georreferenciación y levantamiento topográfico, se utilizaron receptores marca FOIF A90, serial A90187404025 y A90187403020 doble frecuencia.

Tabla 1. Especificaciones receptor FOIF A90

A90 GNSS Receiver Specifications

A90 GNSS Receiver 2024.01

GNSS Engine
- Channels 1408

Advanced interface detection and mitigation
Maximum data rate: 100Hz
- GPS: L1 C/A, L1C, L2C, L2P, L5
- GLONASS: L1 C/A, L2 C/A, L2P, L3, L5
- BeiDou: B1, B2, B3
- Galileo:E1, E5 AltBOC, E5a, E5b, E6
- NavIC (IRNSS) : L5
- SBAS : L1, L5
- QZSS : L1 C/A, L1C, L2C, L5, L6
- L-Band: Up to 5 channels

Performance Specifications
- Time to First Fix(TTFF):
  Cold start:<40s(typical)
  Hot start:<19s(typical)
  Signal reacquisition:
  L1<0.5s(typical)
  L2<1.0s(typical)
- RTK Initialization time:
  <10 s
- RTK Initialization reliability:
  >99.9%

Real-Time Accuracy (rms) *1
- SBAS
  Horizontal: 60cm(1.97ft), Vertical:120cm(3.94ft)
- Real-Time DGPS position
  Horizontal: 40cm (1.31ft), Vertical:80cm(2.62ft)
- Real-Time Kinematic Position(fine mode)
  Horizontal: 8mm(0.03ft) + 0.5ppm
  Vertical: 15mm(0.05ft) + 0.5ppm

Post Processing Accuracy (rms) *2
Static, Rapid Static
- Horizontal: ± 1.5mm+0.4 ppm
- Vertical:± 2.5mm+0.8 ppm
- High-precision Static for long time
- Horizontal:3mm(0.010 ft)+0.1ppm
  Vertical:3.5mm(0.011 ft)+0.4ppm

Solutions

Field Software Suite
FOIFPad(WM/Android) ,FOIF FieldGenius or Carlson SurvCE
- Main functions include:
  A90 GNSS Support: configuration,
- monitoring and control
- Volume computation
- Background raster image
- Network connectivity
  Coordinate System Support: predefined grid systems, predefined datums,
- projections, Geoids, local grid
- Map view with colored lines
  Geodetic Geometry: intersection, azimuth/distance, offsetting, poly-line,
- curve, area
- Road Construction(3D)
  Survey Utilities: calculator, RW5 file
- viewing
  Data import/Export: DXF, SHP, RW5

Data logging
- Recording Interval
  0.1- 999 seconds

Physical
- Flat design
- Size 156mm*76mm(Φ x H)
- Bottom cover: Aluminium magnesium alloy

Memory
- Internal memory: 8GB standard; Supports extending to 32GB

I/O Interface
- TNC port: connecting built-in radio antenna
- 5-pin lemo port: connecting external power supply and external radio
- 7-pin lemo port(USB+serial port): connecting PC and handheld

Operating system
- Based on Linux; Supports Web UI

Voice
- Multi-language supported

Tilt survey sensor
- Automatic correct system by 60 degrees

Data Format
- RTCM2.1,2.3,3.0,3.1
- CMR,CMR+
- RTCA
- NOVATELX
- NMEA 0183

Operation
- RTK rover/base,post-processing
- RTK Network rover: VRS, FKP, MAC
- Point-to-Point GPRS through Real-time Data
- Server Software (internal GPRS or external cell phone)
- LandXML(FOIF FieldGenius support)
  Total Station support (FOIF FieldGenius)
- Import and stake directly from a DXF File (FOIF FieldGenius)

Office Software Suite:
FOIF Geomatics office
Main functions include:
- Network post-processing
- Integrated transformation and grid system computations
- Pre-defined datums along with use -defined capabilities
- Survey mission planning
- Automatic vector processing
- Least-squares network adjustment
- Data analysis and quality control tools
- Coordinate transformations
- Reporting
- Exporting
- Geoid

Environmental
- Operating temperature:
  -30℃ to +65℃(-22°F to 149°F)
- Storage temperature:
  -40℃ to +80℃(-40°F to +176°F)
- MIL-STD-MIL-STD-810H
  Vibration- Vibration resistant
- Humidity: 100% condensing
- Waterproof: IP68
- Shock: 2 m (6.56 ft) pole drop
  1.2m(3.94ft) free drop

Power
- 7.2V, 6800mAh,removable battery
- Over 13 hours when simultaneous use of 2 batteries

Optional System Components
Communication Module
- Internal radio
  -UHF-Link(410-470MHz) Rx&Tx both
  -0.5/2W
- External radio
  -FOIF external radio Rx & Tx(FDL-5, 5/35W selectable)
- 4G LTE module:
  Fits various networks
- BlueTooth
  2.1+EDR Class 2
- WiFi
  IEEE 802.11 b/g/n
- Antenna
  Built-in antenna,integrating GNSS, BT/WLAN and network antenna
- Controller
  - F58/F59

*1 Performance values assume minimum of five satellites, following the procedures recommended in the product manual. High-multipath areas, high PDOP values and periods of severe atmospheric conditions may degrade performance.
*2 Long baselines, long occupations, precise ephemeris used.

FOIF Geomatics CAD
Main functions include:
- DWG file format, compatible with AutoCAD
  Integrated transformation and grid system computations
- Full 3D least squares adjustment, blunder detection, graphical ellipse display
- DTM contouring/Modeling volumes/3D rendering
- Site Design: Ponds, ditches, stockpiles and slopes
- Road Design: horizontal and vertical alignments, cross sectional templates
- Completely customizable user interface
  -Toolbars - can be arranged with "drag and drop" functionality
  -Menus - can be re-organized with our graphical menu editor
  -Screen - items can be turned off for more graphics area
  -Layout - of command window - top or bottom
- Reporting, exporting and printing

MATERIALIZACION Y GEORREFERENCIACIÓN DE PUNTOS TOPOGRAFICOS BASE

La materialización consistió en la construcción de dos mojones con placas de aluminio, marcados en bajo relieve con la información del proyecto, estratégicamente ubicados en altura y buena visual dentro del proyecto, tal como se evidencia en las siguientes imágenes:



Imagen 2. Panorámica GPS1

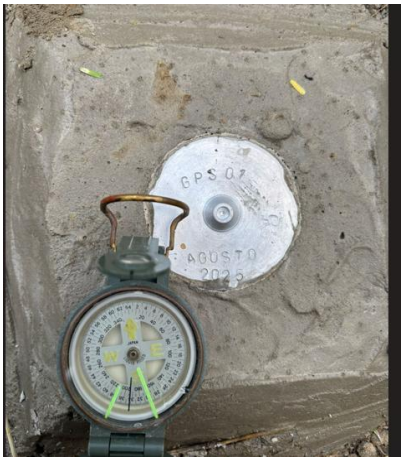


Imagen 3. Placa GPS1



Imagen 4. Panorámica del GPS2



Imagen 5. Placa GPS2

La Georreferenciación consistió en ligar los 2 puntos materializados GPS01 Y GPS02, a la red geodésica del IGAC, para ello se realizaron rastreos, tomando como base la estación activa de la Red Geodésica Nacional (ABPD) del Acueducto y Alcantarillado de Bogotá, ubicada en Bogotá-Cundinamarca y la estación activa de la Red Geodésica Nacional (**IBAG**) del Instituto Geográfico Agustín Codazzi, ubicada en Ibagué-Tolima. Calculando los tiempos de recepción empleando la ecuación t = 65 + (3 min x (d – 10)), donde d es la distancia que separa la estación MAGNA ECO del punto materializado como topográfico base.

CALCULO Y PROCESAMIENTO DE LA INFORMACIÓN DE LOS RECEPTORES GNSS

El Procesamiento de la información generada por los receptores GNSS de marca FOIF referencia A90 (archivos crudos y Rinex), se realizó con el software Leica Infinity 4.0.2 (Licenciado). Para lo cual se tuvo en cuenta:

Tabla 2. Datos para el proceso de georreferenciación

Día Juliano o GPS	250
Fecha de rastreo	07-septiembre- 2025
Semana GPS	2383
Tiempo de rastreo GPS1	05 horas 26 minutos 56 segundos
Tiempo de rastreo GPS2	05 horas 22 minutos 32 segundos
Tiempo de rastreo ABPD	23 horas 59 minutos 30 segundos
Tiempo de rastreo IBAG	23 horas 59 minutos 45 segundos

Los archivos rinex de las estaciones activas de la red geodésica nacional (**ABPD**) e (**ibag**), fueron descargados de la página; https://www.colombiaenmapas.gov.co

La certificación de las coordenadas de las estaciones activas de la red geodésica nacional (**IBAG** y (**BOGA**), fueron descargados de la página; https://www.sirgas.org/es/weekly-solutions/

Tabla 3. Coordenadas geocéntricas de la estación activa ABPD e IBAG época 2025.521

ESTACION	X	Y	Z
ABPD	1742983.2465	-6118331.4745	494730.8208
IBAG	1623166.6516	-6149837.6046	489244.4628

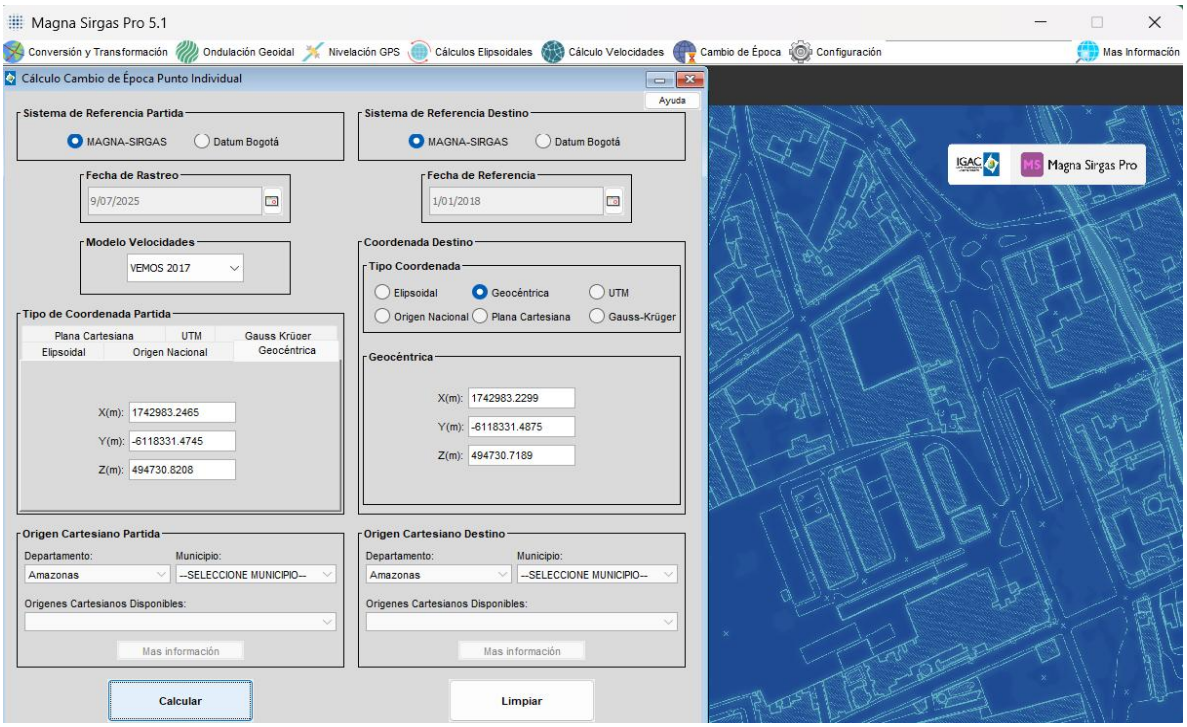


Imagen 6. *Cambio de época estación activa ABPD*

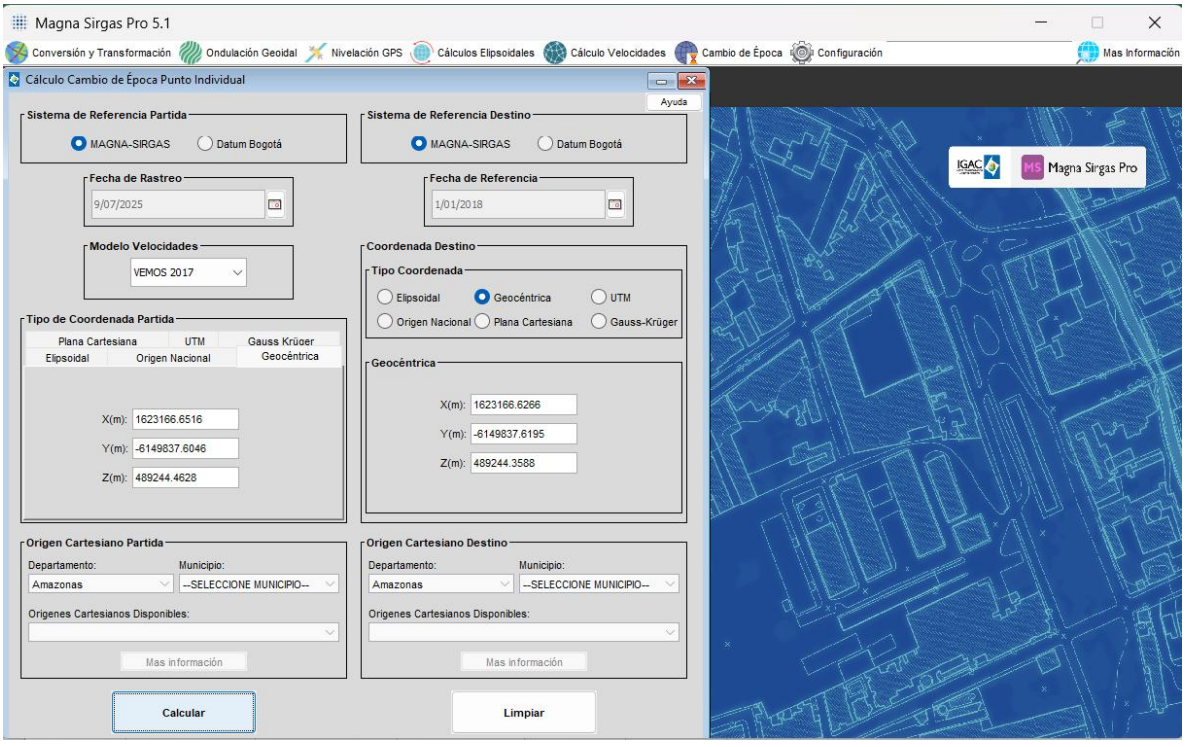


Imagen 7. *Cambio de época estación activa IBAG*

Tabla 4. Coordenadas geocéntricas de la estación activa IBAG y BOGA época 2018.0

ESTACION	X	Y	Z
ABPD	1742983.2299	-6118331.4875	494730.7189
IBAG	1623166.6266	-6149837.6195	489244.3588

Tabla 6. *Coordenadas Planas MAGNA_EPSG9377 y ELIPSOIDALES de los dos puntos topográficos base época 2018.0*

Name	Grid Northing (m)	Grid Easting (m)	Elevation (m)	WGS84 Latitude	WGS84 Longitude	WGS84 Ell.Height (m)
GPS01	2057459.4408	4822965.3266	416.4790	4°31'05.7871"N	74°35'46.77354"W	437.5912
GPS02	2057416.6238	4822954.2190	416.6668	4°31'04.3918"N	74°35'47.13096"W	437.7782

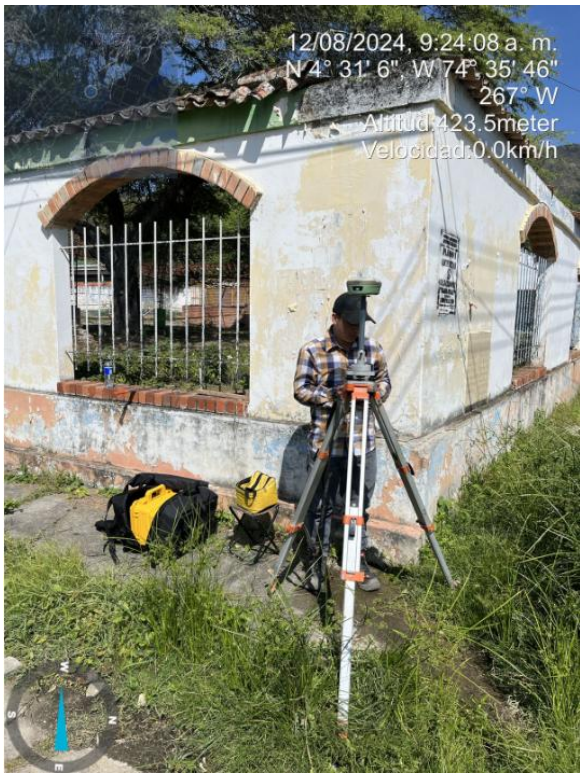
LEVANTAMIENTO TOPOGRÁFICO DE LOS PUNTOS DE TERRENO, DE CONSTRUCCION Y DETALLES CONSIDERADOS RELEVANTES

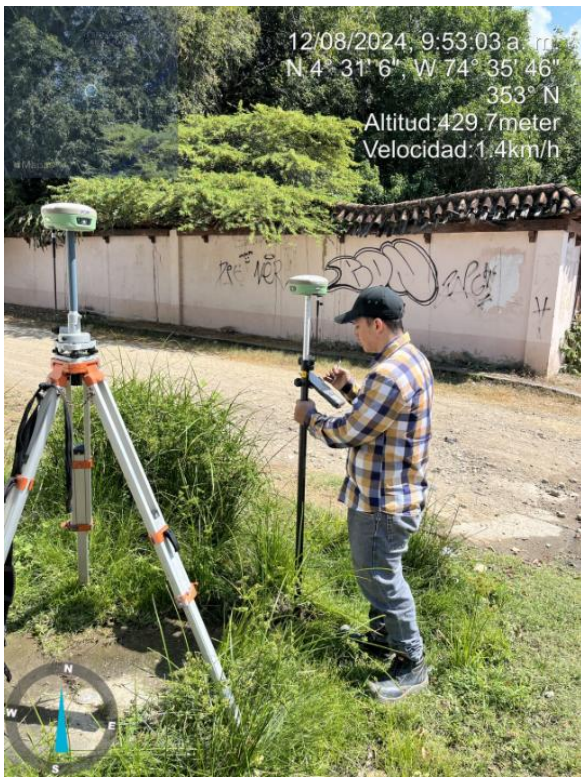
El levantamiento planimétrico se realiza con equipo GNSS marca FOIF A90 serial A90187404025 y A90187403020 doble frecuencia., con coordenadas navegadas para luego en oficina ser ajustado a los puntos topográficos bases tomados como referencia para la corrección en tiempo real, con coordenadas Magna Sirgas EPSG9377.

3 REGISTRO FOTOGRAFICO


12/08/2024, 9:52:39 a. m.
N 4° 31' 6", W 74° 35' 46"
321° NW
Altitud:430.7meter
Velocidad:2.8km/h


12/08/2024, 9:52:28 a. m.
N 4° 31' 6", W 74° 35' 46"
123° SE
Altitud:428.8meter
Velocidad:0.0km/h


12/08/2024, 9:24:08 a. m.
N 4° 31' 6", W 74° 35' 46"
267° W
Altitud:423.5meter
Velocidad:0.0km/h


12/08/2024, 9:53:03 a. m.
N 4° 31' 6", W 74° 35' 46"
353° N
Altitud:429.7meter
Velocidad:1.4km/h

DESCRIPCION PUNTO TOPOGRAFICOS BASE GPS1

Nomenclatura Punto	GPS1	Nomenclatura Placa GPS1	2025-09-07

Departamento: Cundinamarca	Municipio: Apulo	Alcaldia Municipal	Complejo de recreo-deportivo-cultural Centro Felicidad

Coordenadas Navegadas MAGNA SIRGAS

Latitud (φ)	Longitud (λ)	Altura Elipsoidal (h)
4° 31' 05.78710" N	74° 35' 46.77354" W	437.5912

Monumentación

Fecha	Tipo	Monumentado por:
2025-09-07	Mojón	Daniel Ivan Santos Cerquera

Estado del punto	Ancho(m)	Largo(m)	Altura(m)
Bueno	0.15	0.15	0.4

Diagrama de obstáculos

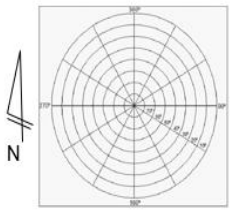


Imagen de la Placa



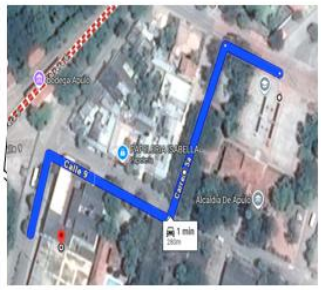
Referencias medidas de los objetos al punto

No.	Objeto	Azimut Magnético(°)	Distancia (m)
1			
2			
3			
4			
5			

Observaciones:

Describió: Daniel Ivan Santos Cerquera
Nombre

Croquis General



Acceso General

Partiendo del parque Central deApulo, en direccion oeste, 42 m hasta la carrera 5a, luego en sentido sur por la carrera 5a 98 m hasta la calle 9a,por la calle 9a avanzamos 94 metros hacia el oeste y giramos a la izquierda y continuamos por 50 metros hasta el punto topografico base GPS01

Croquis Detallado



Perfil



Descripción Detallada

El mojon se encuentra aproximadamente al Centro del predio

DESCRIPCION PUNTO TOPOGRAFICOS BASE GPS2

DESCRIPCIÓN DE PUNTO TOPOGRÁFICO BASE

FECHA
AAAA-MM-DD
2025-09-07

Nomenclatura Punto: GPS2 — Nomenclatura Plac: GPS2

Departamento: Cundinamarca	Municipio: Apulo	Alcaldia Municipal	Complejo de recreo-deportivo-cultural Centro Felicidad

Coordenadas Navegadas MAGNA SIRGAS

Latitud (ϕ)	Longitud (ג)	Altura Elipsoidal (h)
4° 31' 04.39182" N	74° 35' 47.13096" W	437.7782

Monumentación

Fecha	Tipo	Monumentado por:
2025-09-07	Mojón	Daniel Ivan Santos Cerquera

Estado del punto	Ancho(m)	Largo(m)	Altura(m)
Bueno	0.15	0.15	0.4

Croquis General



Acceso General

Partiendo del parque Central deApulo, en direccion oeste, 42 m hasta la carrera 5a, luego en sentido sur por la carrera 5a 98 m hasta la calle 9a,por la calle 9a avanzamos 94 metros hacia el oeste y giramos a la izquierda y continuamos por 70 metros hasta el punto topografico base GPS02

Diagrama de obstáculos

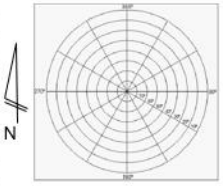


Imagen de la Placa



Croquis Detallado



Perfil



Referencias medidas de los objetos al punto

No.	Objeto	Azimut Magnético(°	Distancia (m)
1			
2			
3			
4			
5			

Observaciones:

Describió: Daniel Ivan Santos Cerquera
Nombre

Descripción Detallada

El mojon se encuentra al costado sur del predio

HOJA DE CAMPO PARA OBSERVACIONES GPS1

HOJA DE CAMPO

PARA OBSERVACIONES GNSS

FECHA: 2025/09/07

DEPARTAMENTO: CUNDINAMARCA | MUNICIPIO: APULO

ALCADIA MUNICIPAL COMPLEJO RECREO - DEPORTIVO - CULTURAL CENTRO FELICIDAD | PUNTO: GPS1

TIPO DE LEVANTAMIENTO:

ESTÁTICO [X] ESTÁTICO RÁPIDO [ ] CINEMÁTICO [ ]

TIPO DE PUNTO:

Punto Geodésico [ ] Punto Topográfico Base [X]

EQUIPO:

	Marca	Modelo	Serial
RECEPTOR	FOIF	A90	A90187404025
ANTENA	FOIF	A90	A90187404025

OPERADOR:

DANIEL IVAN SANTOS
Nombre

REGISTRO DE FUNCIONAMIENTO EN CAMPO

HORA	No. EPOCAS	GDOP	MEMORIA	BATERÍAS (%) A	B	EXT
11:35:28						
17:02:24						

MEDICIÓN DE LA ALTURA

Trípode:
Inicio . m
Final . m



Bastón:
Inicio 2.5 m
Final 2.5 m



Pilastra:
Inicio m
Final m



Otro:
Inicio m
Final m

TIPO DE MEDICIÓN:

Inclinada [ ] Vertical [X] Vertical GHM007 [ ]

		LATITUD				LONGITUD (W)			ALTURA (m)
POSICIÓN NAVEGADA	Inicial	°	'	"	N [ ] S [ ]	°	'	"	
	Final	°	'	"	N [ ] S [ ]	°	'	"	

OBSERVACIONES:

Dia soleado, buenas condiciones atmosfericas, el quipo no posee display.
Hora de inicio de rastreo: 11:35:28. Hora final de rastreo: 17:02:24

HOJA DE CAMPO PARA OBSERVACIONES GPS2

HOJA DE CAMPO

PARA OBSERVACIONES GNSS

FECHA: 2025/09/07

DEPARTAMENTO: CUNDINAMARCA | MUNICIPIO: APULO

ALCADIA MUNICIPAL COMPLEJO RECREO - DEPORTIVO - CULTURAL CENTRO FELICIDAD | PUNTO: GPS2

TIPO DE LEVANTAMIENTO

ESTÁTICO [X] ESTÁTICO RÁPIDO [ ] CINEMÁTICO [ ]

TIPO DE PUNTO

Punto Geodésico [ ] Punto Topográfico Base [X]

EQUIPO

	Marca	Modelo	Serial
RECEPTOR	FOIF	A90	A90187403020
ANTENA	FOIF	A90	A90187403020

OPERADOR

DANIEL IWAN SANTOS
Nombre

REGISTRO DE FUNCIONAMIENTO EN CAMPO

HORA	No. EPOCAS	GDOP	MEMORIA	BATERÍAS (%) A	B	EXT
11:41:58						
17:04:30						

MEDICIÓN DE LA ALTURA

Trípode:
Inicio . m
Final . m



Bastón:
Inicio 2.4 m
Final 2.4 m



Pilastra:
Inicio _____ m
Final _____ m



Otro:
Inicio _____ m
Final _____ m

TIPO DE MEDICIÓN

Inclinada [ ] Vertical [X] Vertical GHM007 [ ]

		LATITUD				LONGITUD (W)			ALTURA (m)
POSICIÓN NAVEGADA	Inicial	°	'	"	N [ ] S [ ]	°	'	"	
	Final	°	'	"	N [ ] S [ ]	°	'	"	

OBSERVACIONES:

Dia soleado,buenas condiciones atmosfericas, el quipo no posee display.
Hora de Inicio de rastreo: 11:41:58. Hora final de rastreo: 17:04:30

REPORTE POSTPROCESO GPS1

Leica Geosystems AG
Heinrich Wild Strasse
CH-9435 Heerbrugg
St. Gallen, Switzerland

Phone: + 41 71 727 3131
Fax: + 41 71 727 4674

- when it has to be right

Leica Geosystems

GNSS Processing Report

Report created: 10/09/2025 23:21:52

Project Details

General		Customer Details		Master Coordinate System	
Project Name:	APULO	Customer Name:	-	Coordinate System Name:	Magna_Sirgas_CTM12
Owner:	-	Contact Person:	-	Transformation Type:	-
Lead Surveyor:	DANIEL IVAN SANTOS CERQUERA	Number:	-	Residual Distribution:	None
Date Created:	10/09/2025 20:04:08	Email:	-	Ellipsoid:	WGS 1984
Last Accessed:	10/09/2025 23:14:35	Skype:	-	Projection Type:	Transverse Mercator
Application Software:	Infinity 4.2.1	Website:	-	Geoid Model:	GEOCOL2004
				CSCS Model:	-

Path:	D:\INFORMACION\TOPOGRAFIA\INGENIERO JULIAN\EL PEÑON\EL PEÑON\EL PEÑON.iprj
Size:	186.5 MB
Comments:	-

Baseline ABPD - GPS1

Processing Parameters (07/09/2025 11:35:28 - 07/09/2025 17:02:24)

Data	Selected	Used	Comments
Cut-Off Angle:	15°	15°	
Frequency:	L1/E1/B1/L2/B2	L1/L2	
Sampling Rate:	5.00 sec	30.00 sec	
Satellite System:	GPS/GLONASS/Galileo/Beidou	GPS/GLONASS	
Ephemeris Type:	Precise	Precise	
Antenna Calibration Set:	NGS 20 Absolute	NGS 20 Absolute	

Processing Strategy

Solution Type:	Phase Fixed	Phase Fixed
Solution Optimisation:	Automatic	Iono Minimised
Frequency to use in Iono Minimised:	Automatic	L1/L2
Tropospheric Model:	Automatic	Computed
Ionospheric Model:	Automatic	Computed
Allow Widelane Fix:	Automatic	Automatic

General Settings

Min. Distance for Iono Minimised:	15 km
Possible Ambiguities Fix up to:	90 km
Min. Duration for Float Solution (static):	00:05:00

Time Settings

Time Format:	HH:mm:ss
Time System:	Local Time
Leap Seconds:	18

Results Baseline: ABPD - GPS1

Acquisition

Start Time - End Time:	07/09/2025 11:35:42 - 07/09/2025 17:02:12
Duration:	05:26:30

Antennas

	Reference - ABPD	Rover - GPS1
Receiver Name / SN:	LEICA GRX1200GGPRO / 355302	A90 / A90187403025
Antenna Name / SN:	LEIAT504GG LEIS / 200462	FOIA90 / -
Carrier Offset:	-	-
Height Reading:	0.0970 m	2.5519 m
Antenna Height:	0.0970 m	2.5519 m

Phase Center Offset

	Reference - LEIAT504GG LEIS		Rover - FOIA90	
GPS	**L1**	**L2**	**L1**	**L2**
East	0.0012 m	-0.0003 m	0.0004 m	0.0011 m
North	0.0004 m	0.0001 m	-0.0012 m	-0.0024 m
Up	0.0871 m	0.1175 m	0.0709 m	0.0622 m

GLONASS	**L1**	**L2**	**L1**	**L2**
East	0.0012 m	-0.0003 m	0.0004 m	0.0014 m
North	0.0004 m	0.0001 m	-0.0007 m	-0.0019 m
Up	0.0871 m	0.1175 m	0.0708 m	0.0614 m

Coordinates

	Reference - ABPD	Rover - GPS1		Reference - ABPD	Rover - GPS1
Point Role:	Adjusted Least Squares 3D	Fixed PP			
WGS84 Latitude:	4° 28' 35.64224" N	4° 31' 05.78692" N	Easting:	4878135.3644 m	4822965.2930 m
WGS84 Longitude:	74° 05' 55.92577" W	74° 35' 46.77463" W	Northing:	2052748.0372 m	2057459.4353 m
WGS84 Ellip. Height:	2958.3600 m	437.6194 m	Ortho. Height:	2931.1053 m	416.5072 m
WGS84 Cartesian X:	1742983.2299 m	1689033.5567 m			
WGS84 Cartesian Y:	-6118331.4875 m	-6130462.3050 m			
WGS84 Cartesian Z:	494730.7189 m	499132.0785 m			

Baseline Vector and Quality - WGS84

ΔLatitude:	0° 02' 30.14469"	SD ΔLatitude:	0.0011 m		
ΔLongitude:	-0° 29' 50.84885"	SD ΔLongitude:	0.0014 m		
ΔHeight:	-2520.7407 m	SD ΔHeight:	0.0132 m		
ΔX:	-53949.6732 m	SD ΔX:	0.0040 m		
ΔY:	-12130.8175 m	SD ΔY:	0.0126 m		
ΔZ:	4401.3596 m	SD ΔZ:	0.0016 m		
Slope Dist.:	55471.5777 m	SD Slope Dist.:	0.0016 m		
M0:	0.8178 m	CQ 1D:	0.0132 m		
Q11:	0.00002390	CQ 2D:	0.0018 m		
Q12:	-0.00007060	CQ 3D:	0.0134 m		
Q22:	0.00023879				
Q13:	0.00000646				
Q23:	-0.00002217				
Q33:	0.00000394				
Frequency:	L1/L2	GDOP:	1.9 - 5.3	GPS SVs:	10/11
Solution Optimisation:	Iono Minimised	PDOP:	1.5 - 3.7	GLONASS SVs:	6/6
Solution Type:	Phase Fixed	HDOP:	0.7 - 2.4	Beidou SVs:	-
		VDOP:	1.3 - 3.0	Galileo SVs:	-
				QZSS SVs:	-
Ephemeris Type:					
GPS	Precise				
GLONASS	Precise				

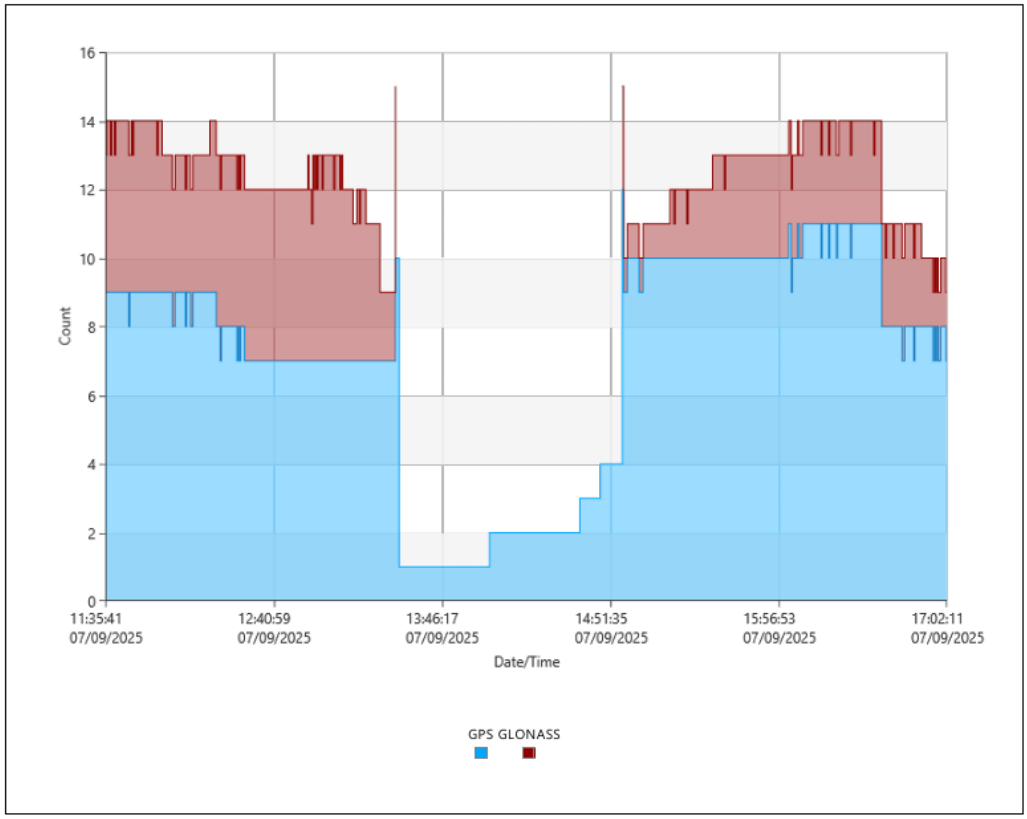
Processing Info (07/09/2025 11:35:28 - 07/09/2025 17:02:24)

Processed Date/Time:	10/09/2025 23:16:35

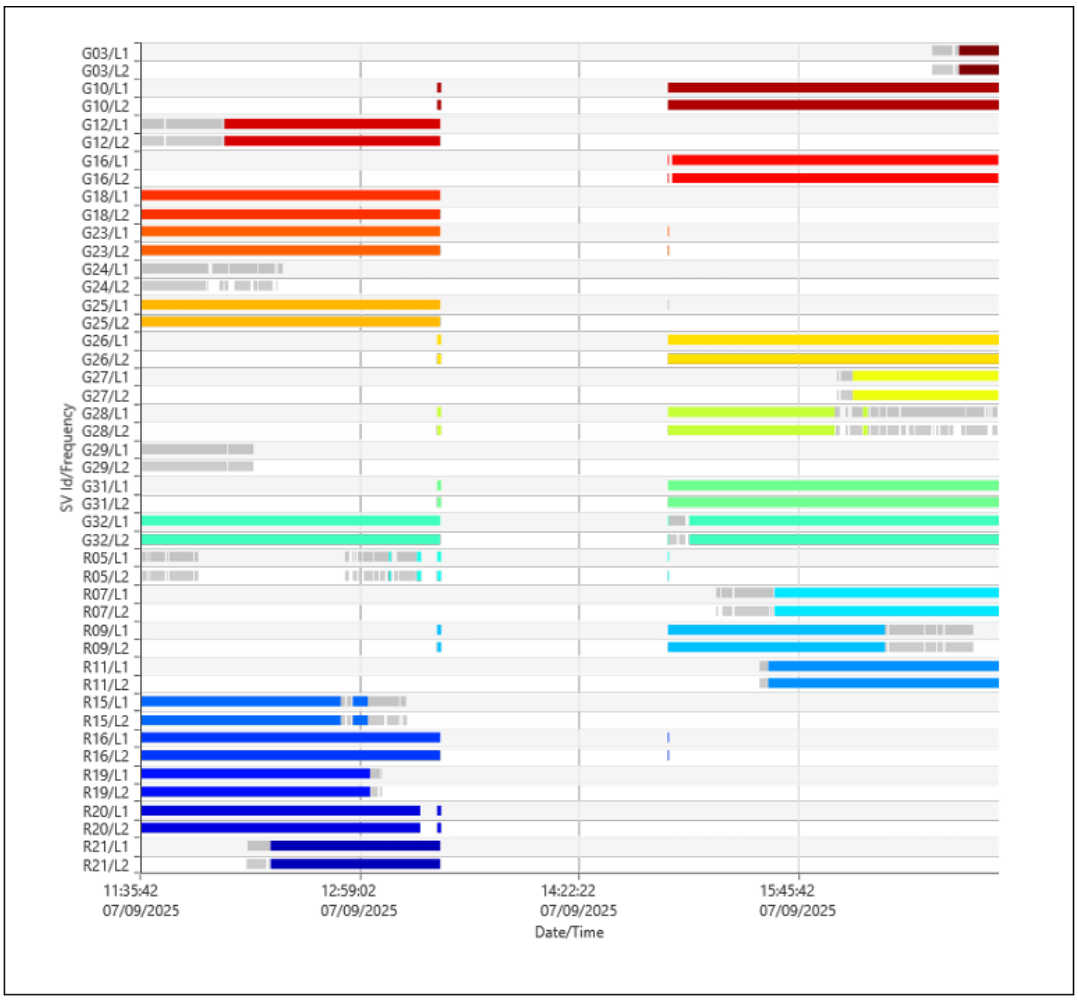
Satellites

Satellite System	Used	Manually Disabled
GPS	G03 G10 G12 G16 G18 G23 G24 G25 G26 G27 G28 G29 G31 G32	-
GLONASS	R05 R07 R09 R11 R15 R16 R19 R20 R21	-
Galileo	-	E07 E08 E13 E15 E18 E19 E21 E23 E26 E27

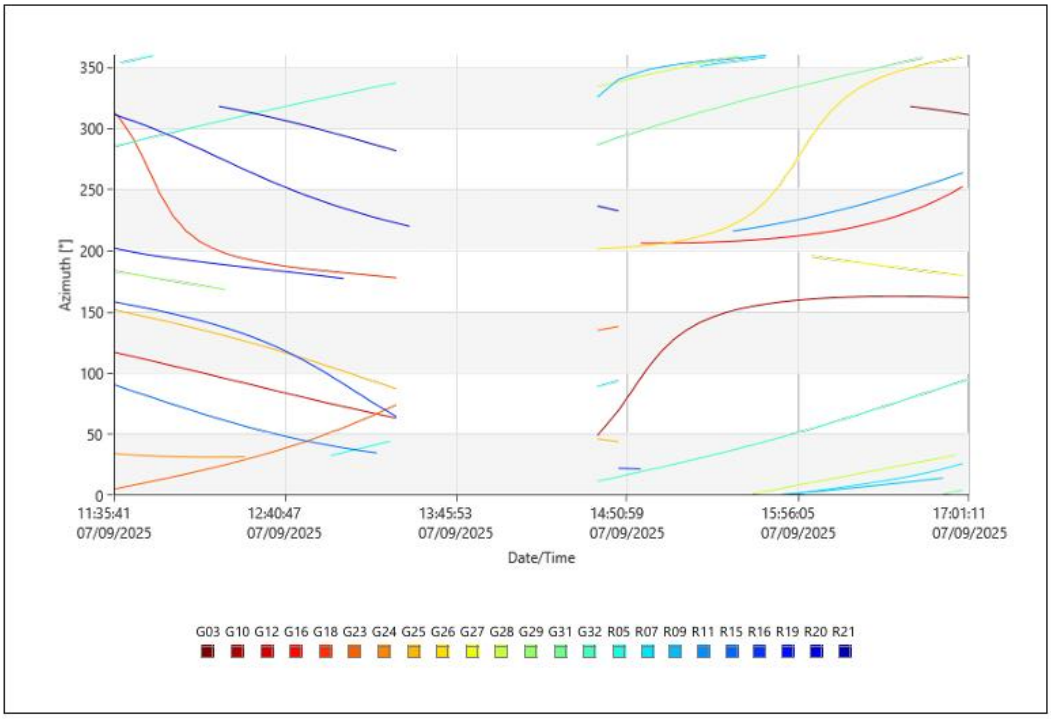
SVs Tracked



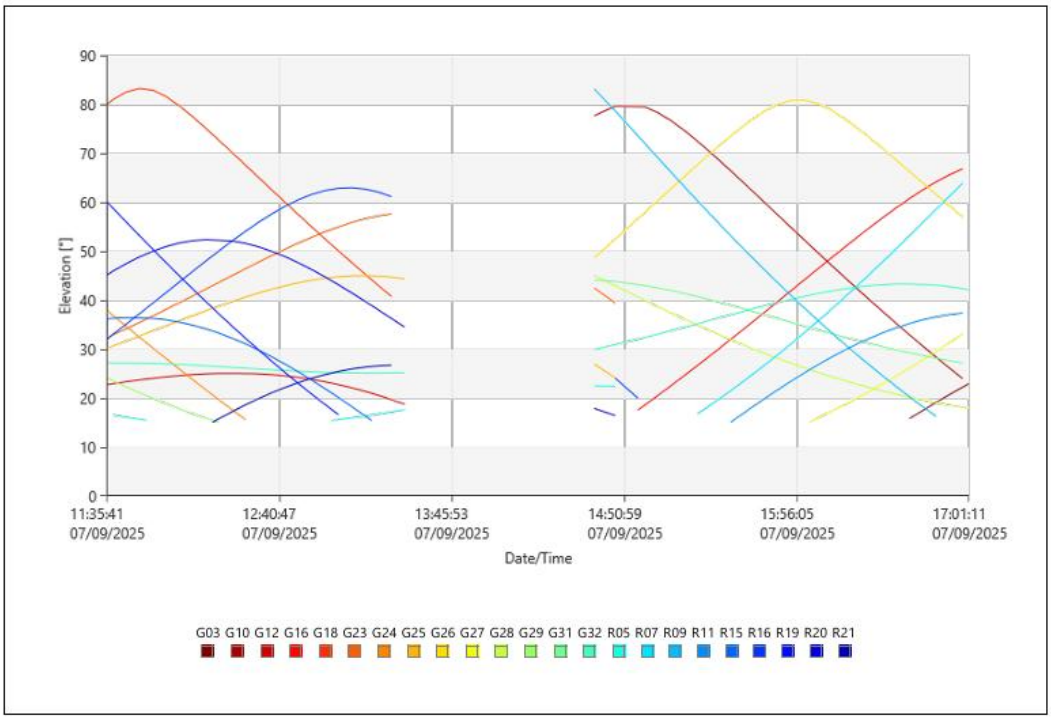
Signals Tracked


G03/L1
G03/L2
G10/L1
G10/L2
G12/L1
G12/L2
G16/L1
G16/L2
G18/L1
G18/L2
G23/L1
G23/L2
G24/L1
G24/L2
G25/L1
G25/L2
G26/L1
G26/L2
G27/L1
G27/L2
G28/L1
G28/L2
G29/L1
G29/L2
G31/L1
G31/L2
G32/L1
G32/L2
R05/L1
R05/L2
R07/L1
R07/L2
R09/L1
R09/L2
R11/L1
R11/L2
R15/L1
R15/L2
R16/L1
R16/L2
R19/L1
R19/L2
R20/L1
R20/L2
R21/L1
R21/L2
SV Id/Frequency
11:35:42
07/09/2025
12:59:02
07/09/2025
14:22:22
07/09/2025
15:45:42
07/09/2025
Date/Time

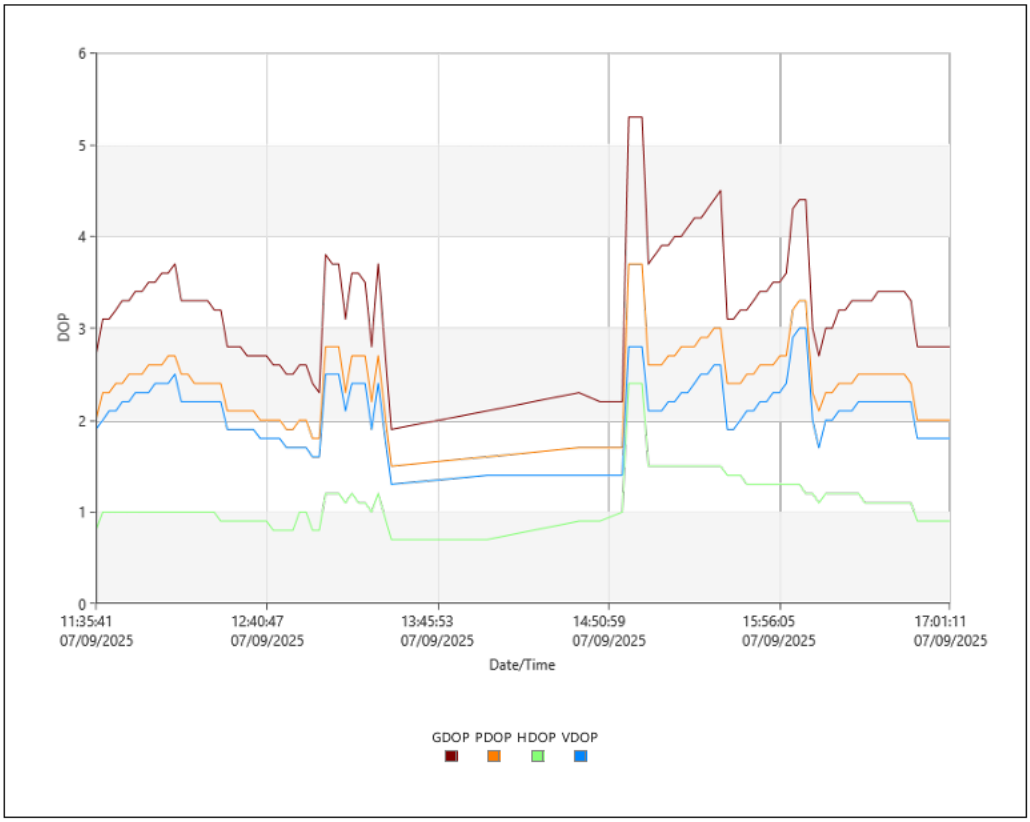
Azimuth



Elevation



DOP



Observation Statistics

Common Epochs: 477

GPS Observations

Frequency	Used	Rejected
L1	2605	392
L2	2605	357

GLONASS Observations

Frequency	Used	Rejected
L1	1440	251
L2	1440	238

Ambiguity Statistics

Number of Ambiguities	GPS	GLONASS	Galileo
Fixed	35	32	0
Total	111	112	0
Independently fixed	327	289	0
Possible independently fixed	389	389	389

Average time between independent fixes: 00:02:30

% of Epochs	GPS		GLONASS	
	L1 [%]	L2 [%]	L1 [%]	L2 [%]
Fixed	94.25	94.96	92.49	92.72
Not fixed	2.97	3.22	7.51	5.66
Not fixed - contradiction	2.77	1.81	0.00	1.62
Not fixed - missing phase	0.00	0.00	0.00	0.00

Status	From Epoch	To Epoch	Duration
Not fixed	**07/09/2025 11:35:42**	**07/09/2025 11:36:12**	**00:00:30**
Fixed	07/09/2025 11:36:12	07/09/2025 13:28:12	01:52:00
Not fixed	**07/09/2025 13:28:12**	**07/09/2025 14:56:42**	**01:28:30**
Fixed	07/09/2025 14:56:42	07/09/2025 17:02:12	02:05:30

Computed Ionospheric Model

Models:	2
Sampling Rate:	30 sec
Height of Single Layer:	350 km

Model 1

Origin Latitude:	4° 28' 35.64224" N	Valid from Epoch:	07/09/2025 06:59:27
Origin Longitude:	74° 05' 55.92577" W	Valid until Epoch:	07/09/2025 12:59:19
Origin Date/Time:	07/09/2025 06:59:27		

Deg. Latitude	Deg. Time	Value	RMS
0	0	1.1574249749	0.0130663387
0	1	2.0554610640	0.0086943498
0	2	-0.3134407435	0.0026033985
1	0	-0.2452720773	0.0067908003
1	1	-0.1608931287	0.0033325466

Model 2

Origin Latitude:	4° 28' 35.64224" N	Valid from Epoch:	07/09/2025 12:59:19
Origin Longitude:	74° 05' 55.92577" W	Valid until Epoch:	07/09/2025 18:59:12
Origin Date/Time:	07/09/2025 12:59:19		

Deg. Latitude	Deg. Time	Value	RMS
0	0	5.5031980594	0.0360006093
0	1	0.5007102506	0.0347967381
0	2	-0.4827341517	0.0080787126
1	0	-1.4968121918	0.0180936624
1	1	0.4306211877	0.0092053412

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- when it has to be right

GNSS Processing Report

Report created: 10/09/2025 23:20:20

Project Details

General		Customer Details		Master Coordinate System	
Project Name:	APULO	Customer Name:	-	Coordinate System Name:	Magna_Sirgas_CTM12
Owner:	-	Contact Person:	-	Transformation Type:	-
Lead Surveyor:	DANIEL IVAN SANTOS CERQUERA	Number:	-	Residual Distribution:	None
Date Created:	10/09/2025 20:04:08	Email:	-	Ellipsoid:	WGS 1984
Last Accessed:	10/09/2025 23:14:35	Skype:	-	Projection Type:	Transverse Mercator
Application Software:	Infinity 4.2.1	Website:	-	Geoid Model:	GEOCOL2004
				CSCS Model:	-

Path:	D:\INFORMACION\TOPOGRAFIA\INGENIERO JULIAN\EL PEÑON\EL PEÑON\EL PEÑON.iprj
Size:	186.5 MB
Comments:	-

Baseline IBAG - GPS1

Processing Parameters (07/09/2025 11:35:28 - 07/09/2025 17:02:24)

Data	Selected	Used	Comments
Cut-Off Angle:	15°	15°	
Frequency:	L1/E1/B1/L2/B2	L1/L2	
Sampling Rate:	5.00 sec	15.00 sec	
Satellite System:	GPS/GLONASS/Galileo/Beidou	GPS/GLONASS	
Ephemeris Type:	Precise	Precise	
Antenna Calibration Set:	NGS 20 Absolute	NGS 20 Absolute	

Processing Strategy

Solution Type:	Phase Fixed	Phase Fixed
Solution Optimisation:	Automatic	Iono Minimised
Frequency to use in Iono Minimised:	Automatic	L1/L2
Tropospheric Model:	Automatic	Computed
Ionospheric Model:	Automatic	Computed
Allow Widelane Fix:	Automatic	Automatic

General Settings

Min. Distance for Iono Minimised:	15 km
Possible Ambiguities Fix up to:	90 km
Min. Duration for Float Solution (static):	00:05:00

Time Settings

Time Format:	HH:mm:ss
Time System:	Local Time
Leap Seconds:	18

Results Baseline: IBAG - GPS1

Acquisition

Start Time - End Time:	07/09/2025 11:35:42 - 07/09/2025 17:02:12
Duration:	05:26:30

Antennas

	Reference - IBAG	Rover - GPS1
Receiver Name / SN:	TRIMBLE NETR9 / 5145K79466	A90 / A90187403025
Antenna Name / SN:	TRM59800.00 SCIS / 5138354309	FOIA90 / -
Carrier Offset:	-	-
Height Reading:	0.1380 m	2.5519 m
Antenna Height:	0.1380 m	2.5519 m

Phase Center Offset

	Reference - TRM59800.00 SCIS		Rover - FOIA90	
GPS	**L1**	**L2**	**L1**	**L2**
East	0.0014 m	0.0000 m	0.0004 m	0.0011 m
North	0.0007 m	-0.0002 m	-0.0012 m	-0.0024 m
Up	0.0894 m	0.1178 m	0.0709 m	0.0622 m

GLONASS	**L1**	**L2**	**L1**	**L2**
East	0.0015 m	-0.0002 m	0.0004 m	0.0014 m
North	0.0010 m	-0.0002 m	-0.0007 m	-0.0019 m
Up	0.0869 m	0.1145 m	0.0708 m	0.0614 m

Coordinates

	Reference - IBAG	Rover - GPS1		Reference - IBAG	Rover - GPS1
Point Role:	Adjusted Least Squares 3D	Fixed PP			
WGS84 Latitude:	4° 25' 40.96541" N	4° 31' 05.78738" N	Easting:	4754324.8857 m	4822965.3774 m
WGS84 Longitude:	75° 12' 53.00491" W	74° 35' 46.77189" W	Northing:	2047662.3050 m	2057459.4491 m
WGS84 Ellip. Height:	1216.0662 m	437.5486 m	Ortho. Height:	1188.6624 m	416.4364 m
WGS84 Cartesian X:	1623166.6264 m	1689033.6191 m			
WGS84 Cartesian Y:	-6149837.6196 m	-6130462.2136 m			
WGS84 Cartesian Z:	489244.3588 m	499132.0868 m			

Baseline Vector and Quality - WGS84

ΔLatitude:	0° 05' 24.82196"	SD ΔLatitude:	0.0004 m
ΔLongitude:	0° 37' 06.23302"	SD ΔLongitude:	0.0005 m
ΔHeight:	-778.5176 m	SD ΔHeight:	0.0046 m
ΔX:	65866.9927 m	SD ΔX:	0.0013 m
ΔY:	19375.4060 m	SD ΔY:	0.0044 m
ΔZ:	9887.7280 m	SD ΔZ:	0.0006 m
Slope Dist.:	69365.9445 m	SD Slope Dist.:	0.0005 m

M0:	0.5599 m	CQ 1D:	0.0046 m
Q11:	0.00000547	CQ 2D:	0.0006 m
Q12:	-0.00001712	CQ 3D:	0.0046 m
Q22:	0.00006197		
Q13:	0.00000154		
Q23:	-0.00000570		
Q33:	0.00000107		

Frequency:	L1/L2	GDOP:	1.9 - 5.6	GPS SVs:	9/9
Solution Optimisation:	Iono Minimised	PDOP:	1.5 - 3.7	GLONASS SVs:	6/7
Solution Type:	Phase Fixed	HDOP:	0.6 - 1.7	Beidou SVs:	-
		VDOP:	1.3 - 3.2	Galileo SVs:	-
				QZSS SVs:	-

Ephemeris Type:	
GPS	Precise
GLONASS	Precise

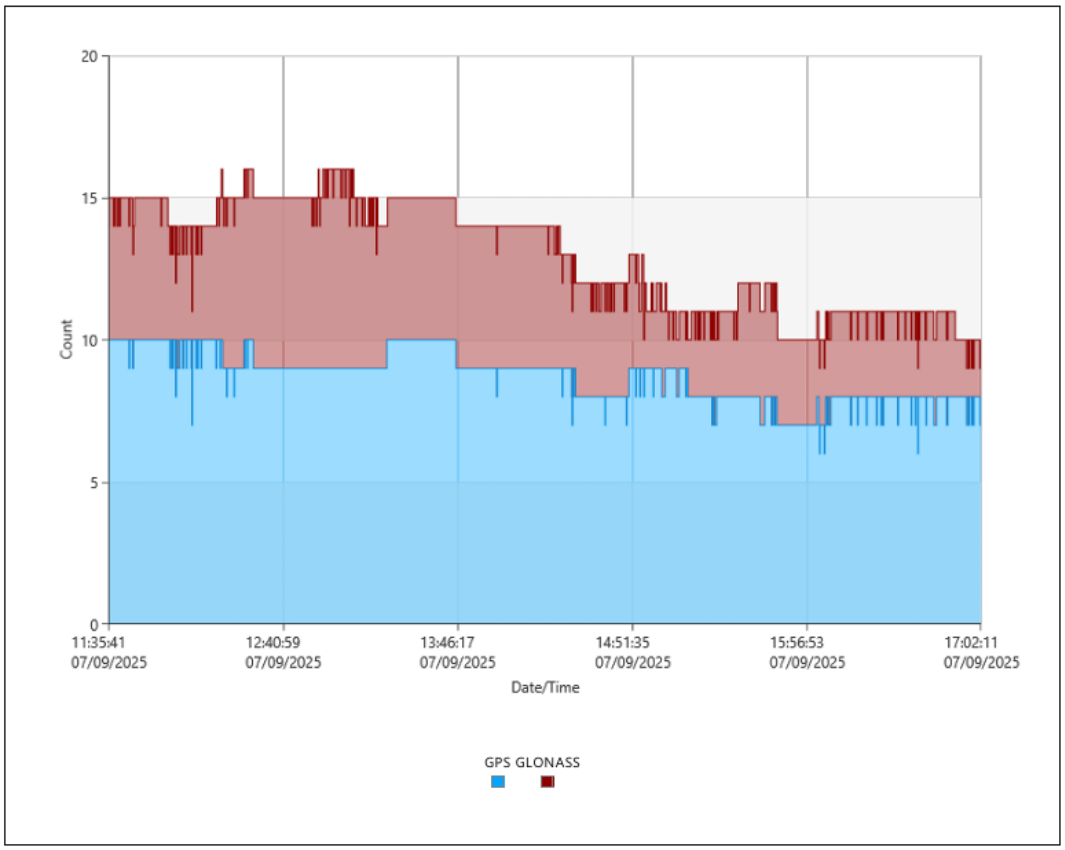
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Processed Date/Time:	10/09/2025 23:16:35

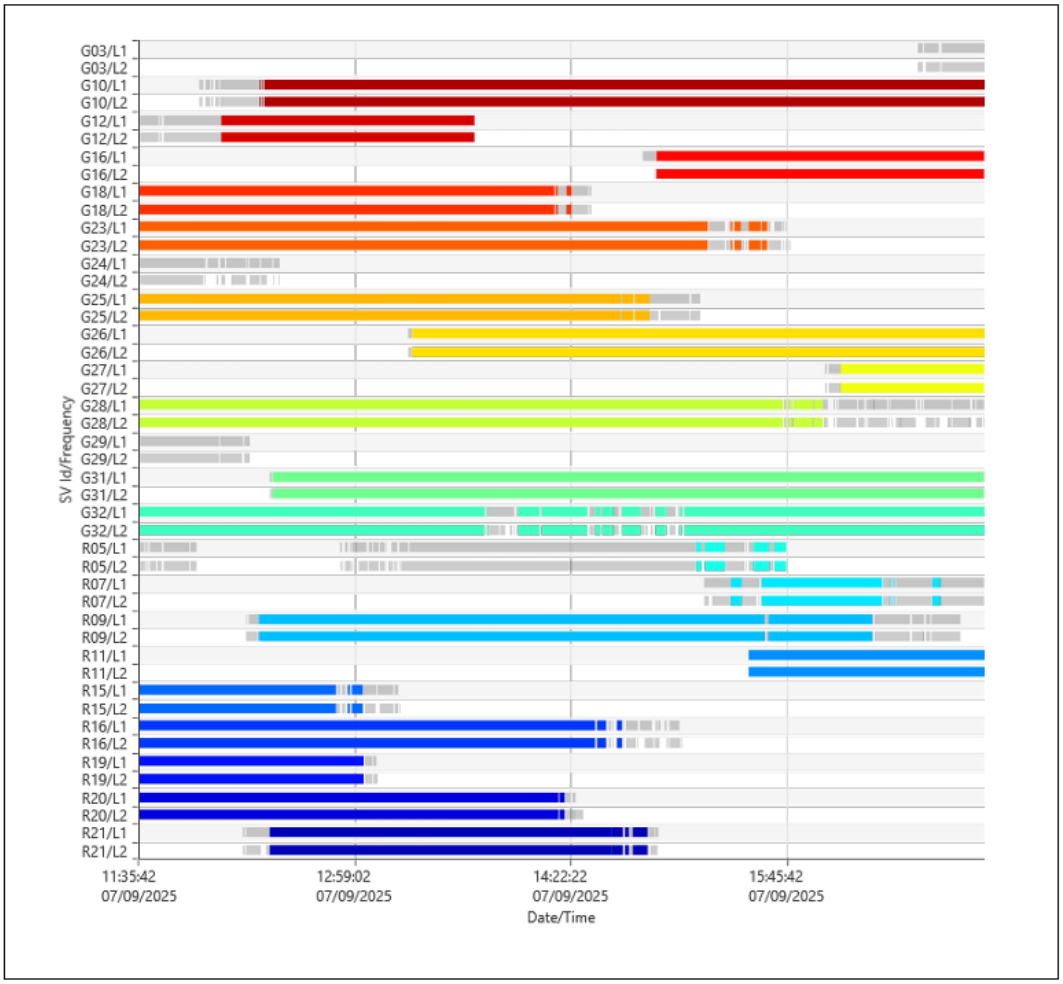
Satellites

Satellite System	Used	Manually Disabled
GPS	G10 G12 G16 G18 G23 G24 G25 G26 G27 G28 G29 G31 G32	-
GLONASS	R05 R07 R09 R11 R15 R16 R19 R20 R21	-
Galileo	-	E07 E08 E13 E15 E18 E19 E21 E23 E26 E27

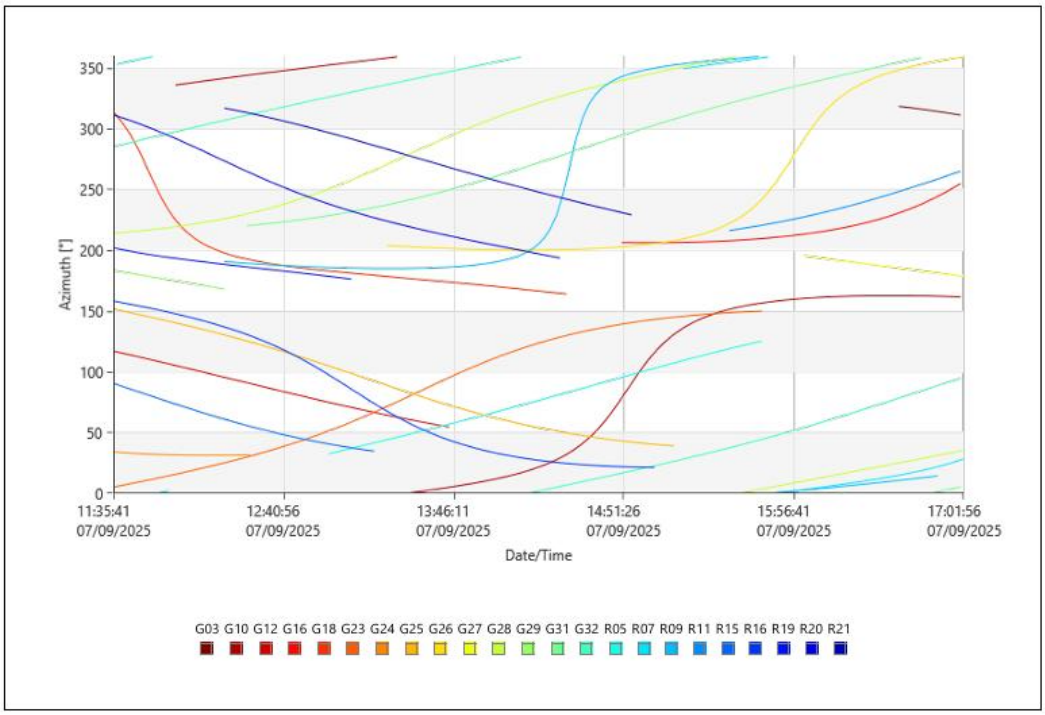
SVs Tracked



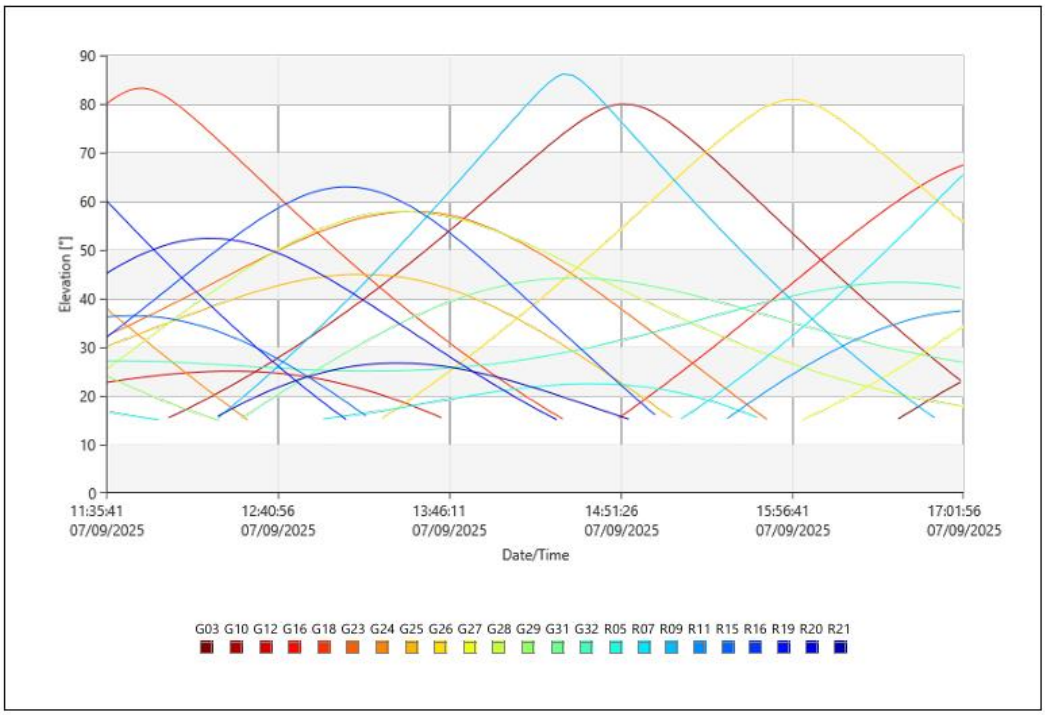
Signals Tracked


G03/L1
G03/L2
G10/L1
G10/L2
G12/L1
G12/L2
G16/L1
G16/L2
G18/L1
G18/L2
G23/L1
G23/L2
G24/L1
G24/L2
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R05/L1
R05/L2
R07/L1
R07/L2
R09/L1
R09/L2
R11/L1
R11/L2
R15/L1
R15/L2
R16/L1
R16/L2
R19/L1
R19/L2
R20/L1
R20/L2
R21/L1
R21/L2
SV Id/Frequency
11:35:42
07/09/2025
12:59:02
07/09/2025
14:22:22
07/09/2025
15:45:42
07/09/2025
Date/Time

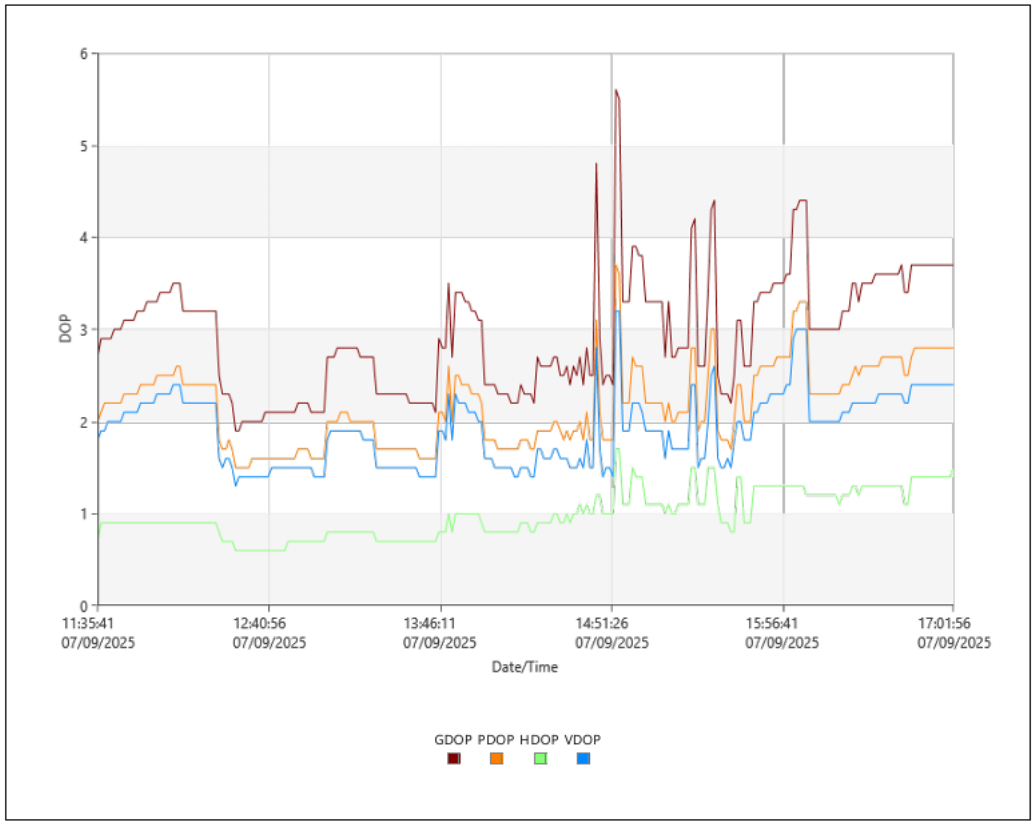
Azimuth



Elevation



DOP



Observation Statistics

Common Epochs: 1307

GPS Observations

Frequency	Used	Rejected
L1	8823	1246
L2	8823	1151

GLONASS Observations

Frequency	Used	Rejected
L1	4242	1255
L2	4242	1242

Ambiguity Statistics

Number of Ambiguities	GPS	GLONASS	Galileo
Fixed	46	61	0
Total	169	189	0
Independently fixed	410	409	0
Possible independently fixed	528	528	528

Average time between independent fixes: 00:02:30

% of Epochs	GPS		GLONASS	
	L1 [%]	L2 [%]	L1 [%]	L2 [%]
Fixed	93.40	91.49	82.08	85.14
Not fixed	3.94	5.54	10.14	7.39
Not fixed - contradiction	2.67	2.96	7.78	7.47
Not fixed - missing phase	0.00	0.00	0.00	0.00

Status	From Epoch	To Epoch	Duration
Not fixed	**07/09/2025 11:35:42**	**07/09/2025 11:35:57**	**00:00:15**
Fixed	07/09/2025 11:35:57	07/09/2025 17:02:12	05:26:15

Computed Ionospheric Model

Models:	2
Sampling Rate:	30 sec
Height of Single Layer:	350 km

Model 1

Origin Latitude:	4° 25' 40.96541" N	Valid from Epoch:	07/09/2025 06:59:35
Origin Longitude:	75° 12' 53.00491" W	Valid until Epoch:	07/09/2025 12:59:31
Origin Date/Time:	07/09/2025 06:59:35		

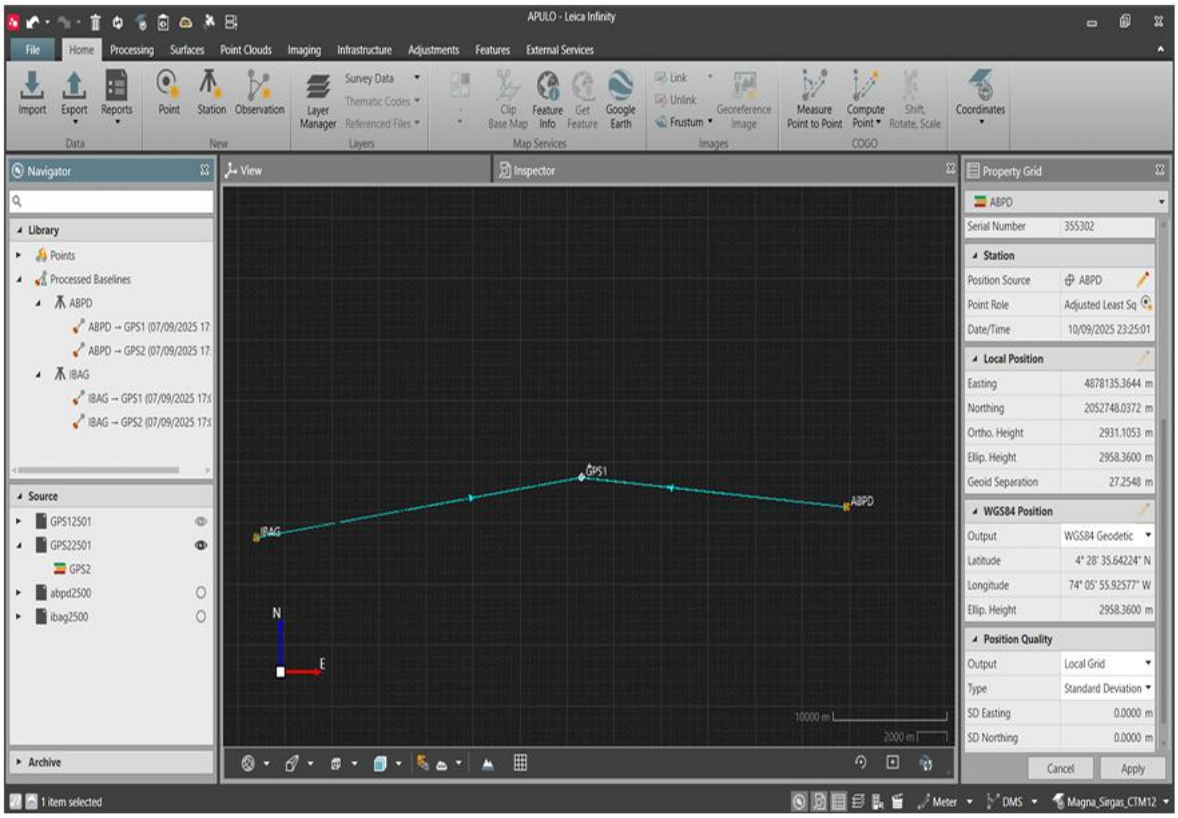
Deg. Latitude	Deg. Time	Value	RMS
0	0	1.0535686535	0.0217752017
0	1	2.0641820044	0.0136546610
0	2	-0.2862228504	0.0039097640
1	0	-0.3796072595	0.0127576209
1	1	-0.1382937432	0.0063400812

Model 2

Origin Latitude:	4° 25' 40.96541" N	Valid from Epoch:	07/09/2025 12:59:31
Origin Longitude:	75° 12' 53.00491" W	Valid until Epoch:	07/09/2025 18:59:27
Origin Date/Time:	07/09/2025 12:59:31		

Deg. Latitude	Deg. Time	Value	RMS
0	0	4.8674737966	0.0218775776
0	1	0.7798017902	0.0174726253
0	2	-0.5346314967	0.0054099546
1	0	-0.9113969449	0.0137452339
1	1	0.2259372919	0.0076000459

ESQUEMA DE DOBLE DETERMINACION GPS1



REPORTE POSTPROCESO GPS2

Leica Geosystems AG
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- when it has to be right

Leica Geosystems

GNSS Processing Report

Report created: 10/09/2025 23:23:00

Project Details

General		Customer Details		Master Coordinate System	
Project Name:	APULO	Customer Name:	-	Coordinate System Name:	Magna_Sirgas_CTM12
Owner:	-	Contact Person:	-	Transformation Type:	-
Lead Surveyor:	DANIEL IVAN SANTOS CERQUERA	Number:	-	Residual Distribution:	None
Date Created:	10/09/2025 20:04:08	Email:	-	Ellipsoid:	WGS 1984
Last Accessed:	10/09/2025 23:14:35	Skype:	-	Projection Type:	Transverse Mercator
Application Software:	Infinity 4.2.1	Website:	-	Geoid Model:	GEOCOL2004
				CSCS Model:	-

Path:	D:\INFORMACION\TOPOGRAFIA\INGENIERO JULIAN\EL PEÑON\EL PEÑON\EL PEÑON.iprj
Size:	186.5 MB
Comments:	-

Baseline ABPD - GPS2

Processing Parameters (07/09/2025 11:41:58 - 07/09/2025 17:04:30)

Data	Selected	Used	Comments
Cut-Off Angle:	15°	15°	
Frequency:	L1/E1/B1/L2/B2	L1/L2	
Sampling Rate:	5.00 sec	30.00 sec	
Satellite System:	GPS/GLONASS/Galileo/Beidou	GPS/GLONASS	
Ephemeris Type:	Precise	Precise	
Antenna Calibration Set:	NGS 20 Absolute	NGS 20 Absolute	

Processing Strategy

Solution Type:	Phase Fixed	Phase Fixed
Solution Optimisation:	Automatic	Iono Minimised
Frequency to use in Iono Minimised:	Automatic	L1/L2
Tropospheric Model:	Automatic	Computed
Ionospheric Model:	Automatic	Computed
Allow Widelane Fix:	Automatic	Automatic

General Settings

Min. Distance for Iono Minimised:	15 km
Possible Ambiguities Fix up to:	90 km
Min. Duration for Float Solution (static):	00:05:00

Time Settings

Time Format:	HH:mm:ss
Time System:	Local Time
Leap Seconds:	18

Results Baseline: ABPD - GPS2

Acquisition

Start Time - End Time:	07/09/2025 11:42:12 - 07/09/2025 17:04:12
Duration:	05:22:00

Antennas

	Reference - ABPD	Rover - GPS2
Receiver Name / SN:	LEICA GRX1200GGPRO / 355302	A90 / A90187403020
Antenna Name / SN:	LEIAT504GG LEIS / 200462	FOIA90 / -
Carrier Offset:	-	-
Height Reading:	0.0970 m	2.4689 m
Antenna Height:	0.0970 m	2.4689 m

Phase Center Offset

	Reference - LEIAT504GG LEIS		Rover - FOIA90	
GPS	**L1**	**L2**	**L1**	**L2**
East	0.0012 m	-0.0003 m	0.0004 m	0.0011 m
North	0.0004 m	0.0001 m	-0.0012 m	-0.0024 m
Up	0.0871 m	0.1175 m	0.0709 m	0.0622 m

GLONASS	**L1**	**L2**	**L1**	**L2**
East	0.0012 m	-0.0003 m	0.0004 m	0.0014 m
North	0.0004 m	0.0001 m	-0.0007 m	-0.0019 m
Up	0.0871 m	0.1175 m	0.0708 m	0.0614 m

Coordinates

	Reference - ABPD	Rover - GPS2		Reference - ABPD	Rover - GPS2
Point Role:	Adjusted Least Squares 3D	Fixed PP			
WGS84 Latitude:	4° 28' 35.64224" N	4° 31' 04.39187" N	Easting:	4878135.3644 m	4822954.1743 m
WGS84 Longitude:	74° 05' 55.92577" W	74° 35' 47.13241" W	Northing:	2052748.0372 m	2057416.6256 m
WGS84 Ellip. Height:	2958.3600 m	437.8882 m	Ortho. Height:	2931.1053 m	416.7768 m
WGS84 Cartesian X:	1742983.2299 m	1689023.8909 m			
WGS84 Cartesian Y:	-6118331.4875 m	-6130468.7477 m			
WGS84 Cartesian Z:	494730.7189 m	499089.3781 m			

Baseline Vector and Quality - WGS84

ΔLatitude:	0° 02' 28.74964"	SD ΔLatitude:	0.0013 m		
ΔLongitude:	-0° 29' 51.20664"	SD ΔLongitude:	0.0014 m		
ΔHeight:	-2520.4718 m	SD ΔHeight:	0.0126 m		
ΔX:	-53959.3390 m	SD ΔX:	0.0039 m		
ΔY:	-12137.2602 m	SD ΔY:	0.0120 m		
ΔZ:	4358.6592 m	SD ΔZ:	0.0016 m		
Slope Dist.:	55479.0164 m	SD Slope Dist.:	0.0016 m		
M0:	0.8273 m	CQ 1D:	0.0126 m		
Q11:	0.00002175	CQ 2D:	0.0019 m		
Q12:	-0.00006275	CQ 3D:	0.0127 m		
Q22:	0.00021194				
Q13:	0.00000457				
Q23:	-0.00001643				
Q33:	0.00000377				
Frequency:	L1/L2	GDOP:	2.1 - 12.1	GPS SVs:	10/10
Solution Optimisation:	Iono Minimised	PDOP:	1.6 - 7.5	GLONASS SVs:	7/7
Solution Type:	Phase Fixed	HDOP:	0.7 - 2.7	Beidou SVs:	-
		VDOP:	1.4 - 7.0	Galileo SVs:	-
				QZSS SVs:	-
Ephemeris Type:					
GPS	Precise				
GLONASS	Precise				

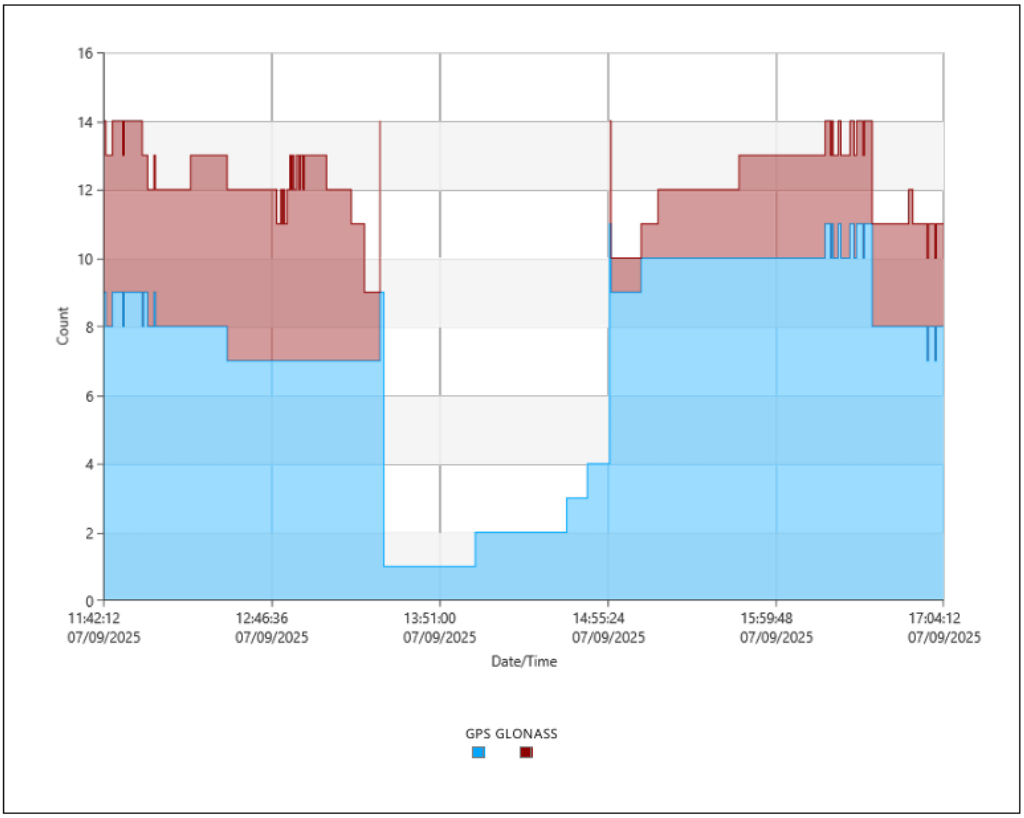
Processing Info (07/09/2025 11:41:58 - 07/09/2025 17:04:30)

Processed Date/Time:	10/09/2025 23:16:35

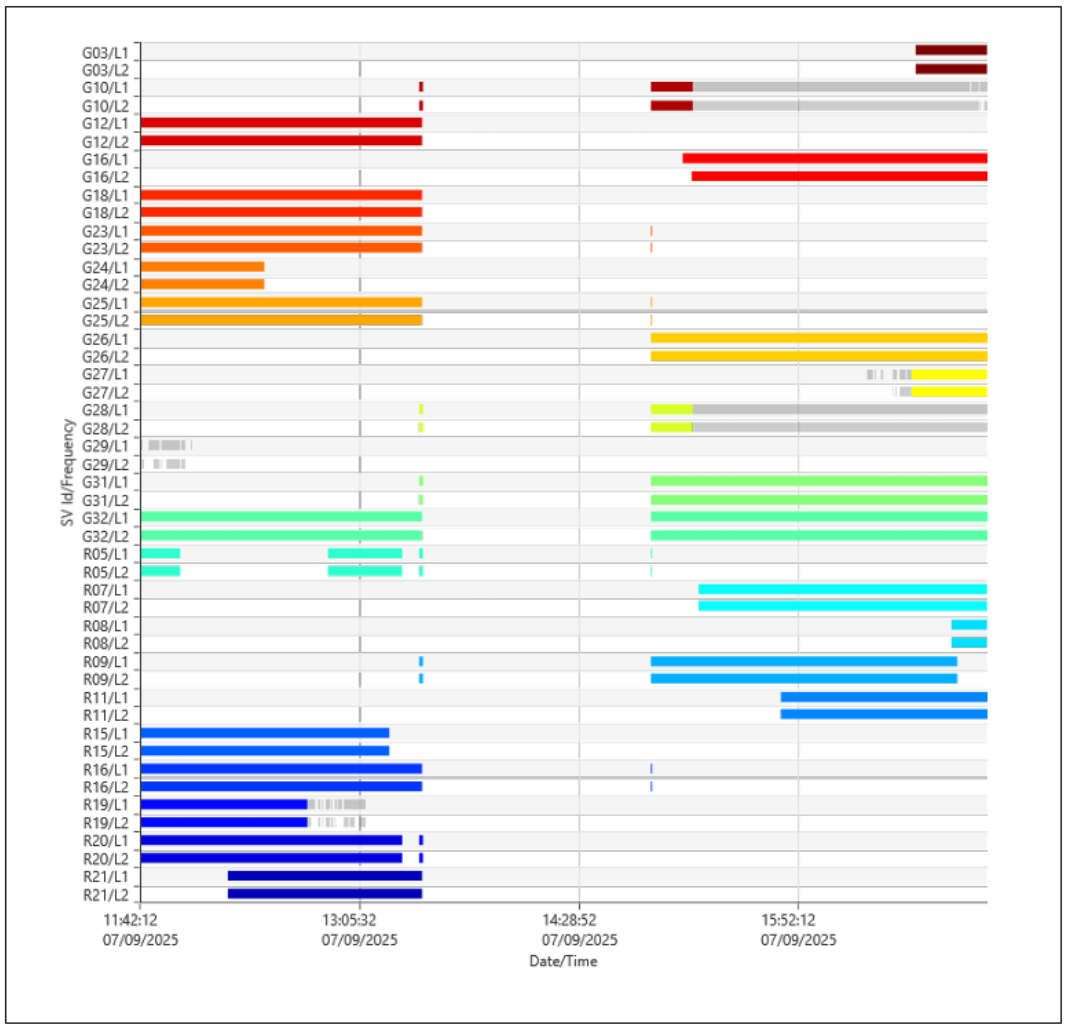
Satellites

Satellite System	Used	Manually Disabled
GPS	G03 G10 G12 G16 G18 G23 G24 G25 G26 G27 G28 G29 G31 G32	-
GLONASS	R05 R07 R08 R09 R11 R15 R16 R19 R20 R21	-
Galileo	-	E07 E08 E13 E15 E18 E19 E21 E23 E26 E27

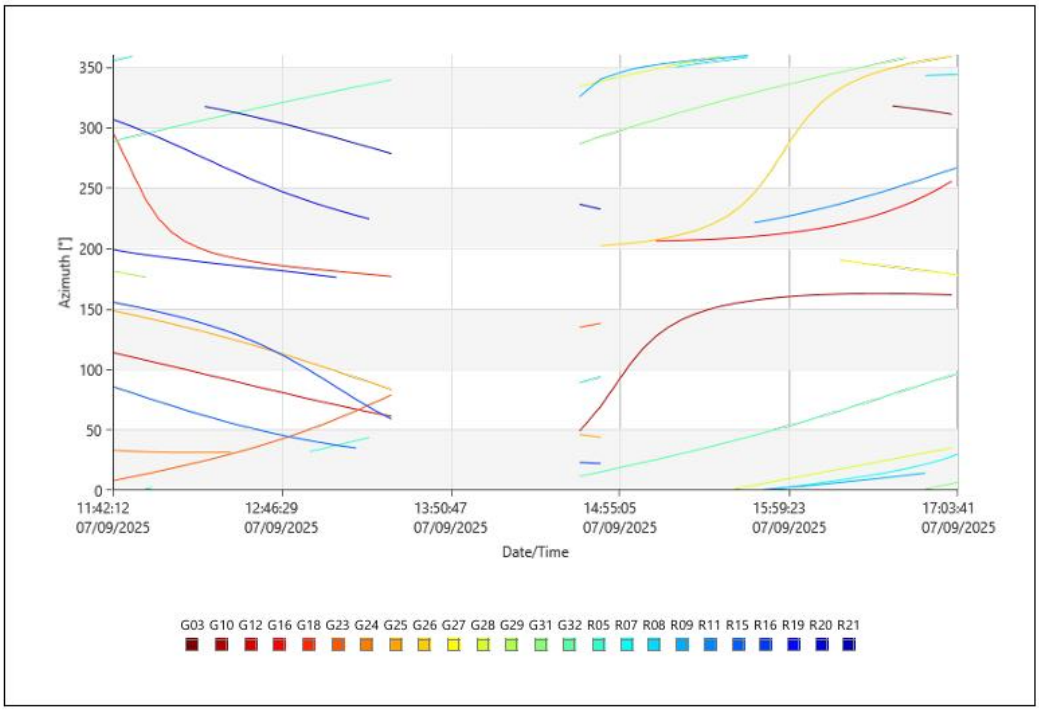
SVs Tracked



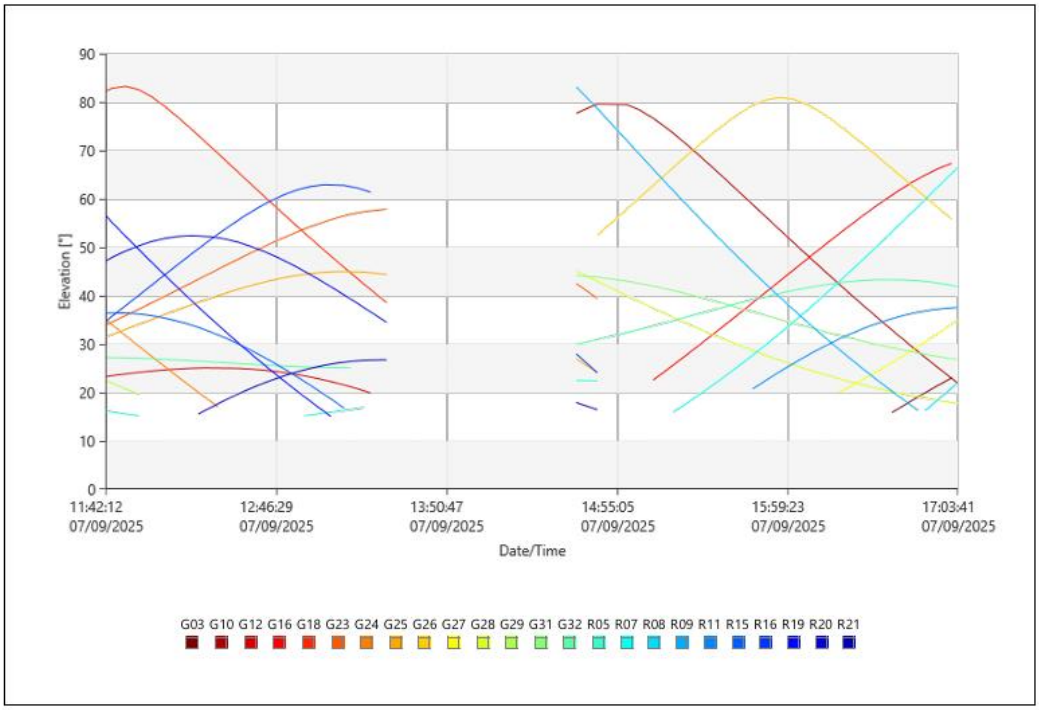
Signals Tracked


G03/L1
G03/L2
G10/L1
G10/L2
G12/L1
G12/L2
G16/L1
G16/L2
G18/L1
G18/L2
G23/L1
G23/L2
G24/L1
G24/L2
G25/L1
G25/L2
G26/L1
G26/L2
G27/L1
G27/L2
G28/L1
G28/L2
G29/L1
G29/L2
G31/L1
G31/L2
G32/L1
G32/L2
R05/L1
R05/L2
R07/L1
R07/L2
R08/L1
R08/L2
R09/L1
R09/L2
R11/L1
R11/L2
R15/L1
R15/L2
R16/L1
R16/L2
R19/L1
R19/L2
R20/L1
R20/L2
R21/L1
R21/L2
SV Id/Frequency
11:42:12
07/09/2025
13:05:32
07/09/2025
14:28:52
07/09/2025
15:52:12
07/09/2025
Date/Time

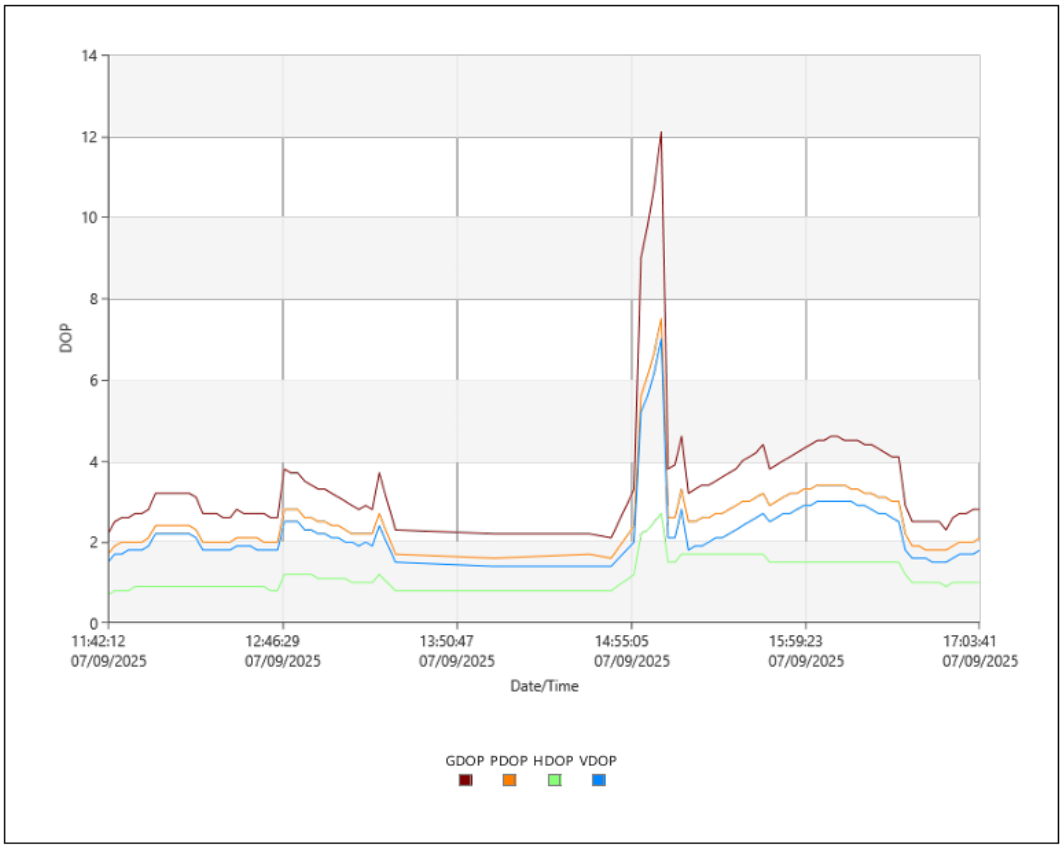
Azimuth



Elevation



DOP



Observation Statistics

Common Epochs: 468

GPS Observations

Frequency	Used	Rejected
L1	2354	494
L2	2346	480

GLONASS Observations

Frequency	Used	Rejected
L1	1618	33
L2	1618	24

Ambiguity Statistics

Number of Ambiguities	GPS	GLONASS	Galileo
Fixed	25	28	0
Total	37	38	0
Independently fixed	347	325	0
Possible independently fixed	383	383	383

Average time between independent fixes: 00:02:30

% of Epochs	GPS		GLONASS	
	L1 [%]	L2 [%]	L1 [%]	L2 [%]
Fixed	86.07	85.94	99.59	99.80
Not fixed	0.38	0.38	0.41	0.20
Not fixed - contradiction	13.55	13.68	0.00	0.00
Not fixed - missing phase	0.00	0.00	0.00	0.00

Status	From Epoch	To Epoch	Duration
Not fixed	**07/09/2025 11:42:12**	**07/09/2025 11:42:42**	**00:00:30**
Fixed	07/09/2025 11:42:42	07/09/2025 13:28:12	01:45:30
Not fixed	**07/09/2025 13:28:12**	**07/09/2025 15:12:12**	**01:44:00**
Fixed	07/09/2025 15:12:12	07/09/2025 17:04:12	01:52:00

Computed Ionospheric Model

Models:	2
Sampling Rate:	30 sec
Height of Single Layer:	350 km

Model 1

Origin Latitude:	4° 28' 35.64224" N	Valid from Epoch:	07/09/2025 06:59:27
Origin Longitude:	74° 05' 55.92577" W	Valid until Epoch:	07/09/2025 12:59:19
Origin Date/Time:	07/09/2025 06:59:27		

Deg. Latitude	Deg. Time	Value	RMS
0	0	1.1574249749	0.0130663387
0	1	2.0554610640	0.0086943498
0	2	-0.3134407435	0.0026033985
1	0	-0.2452720773	0.0067908003
1	1	-0.1608931287	0.0033325466

Model 2

Origin Latitude:	4° 28' 35.64224" N	Valid from Epoch:	07/09/2025 12:59:19
Origin Longitude:	74° 05' 55.92577" W	Valid until Epoch:	07/09/2025 18:59:12
Origin Date/Time:	07/09/2025 12:59:19		

Deg. Latitude	Deg. Time	Value	RMS
0	0	5.5031980594	0.0360006093
0	1	0.5007102506	0.0347967381
0	2	-0.4827341517	0.0080787126
1	0	-1.4968121918	0.0180936624
1	1	0.4306211877	0.0092053412

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- when it has to be right

GNSS Processing Report

Report created: 10/09/2025 23:17:08

Project Details

General		Customer Details		Master Coordinate System	
Project Name:	APULO	Customer Name:	-	Coordinate System Name:	Magna_Sirgas_CTM12
Owner:	-	Contact Person:	-	Transformation Type:	-
Lead Surveyor:	DANIEL IVAN SANTOS CERQUERA	Number:	-	Residual Distribution:	None
Date Created:	10/09/2025 20:04:08	Email:	-	Ellipsoid:	WGS 1984
Last Accessed:	10/09/2025 23:14:35	Skype:	-	Projection Type:	Transverse Mercator
Application Software:	Infinity 4.2.1	Website:	-	Geoid Model:	GEOCOL2004
				CSCS Model:	-

Path:	D:\INFORMACION\TOPOGRAFIA\INGENIERO JULIAN\EL PEÑON\EL PEÑON\EL PEÑON.iprj
Size:	186.5 MB
Comments:	-

Baseline IBAG - GPS2

Processing Parameters (07/09/2025 11:41:58 - 07/09/2025 17:04:30)

Data	Selected	Used	Comments
Cut-Off Angle:	15°	15°	
Frequency:	L1/E1/B1/L2/B2	L1/L2	
Sampling Rate:	5.00 sec	15.00 sec	
Satellite System:	GPS/GLONASS/Galileo/Beidou	GPS/GLONASS	
Ephemeris Type:	Precise	Precise	
Antenna Calibration Set:	NGS 20 Absolute	NGS 20 Absolute	

Processing Strategy

Solution Type:	Phase Fixed	Phase Fixed
Solution Optimisation:	Automatic	Iono Minimised
Frequency to use in Iono Minimised:	Automatic	L1/L2
Tropospheric Model:	Automatic	Computed
Ionospheric Model:	Automatic	Computed
Allow Widelane Fix:	Automatic	Automatic

General Settings

Min. Distance for Iono Minimised:	15 km
Possible Ambiguities Fix up to:	90 km
Min. Duration for Float Solution (static):	00:05:00

Time Settings

Time Format:	HH:mm:ss
Time System:	Local Time
Leap Seconds:	18

Results Baseline: IBAG - GPS2

Acquisition

Start Time - End Time:	07/09/2025 11:42:12 - 07/09/2025 17:04:27
Duration:	05:22:15

Antennas

	Reference - IBAG	Rover - GPS2
Receiver Name / SN:	TRIMBLE NETR9 / 5145K79466	A90 / A90187403020
Antenna Name / SN:	TRM59800.00 SCIS / 5138354309	FOIA90 / -
Carrier Offset:	-	-
Height Reading:	0.1380 m	2.4689 m
Antenna Height:	0.1380 m	2.4689 m

Phase Center Offset

	Reference - TRM59800.00 SCIS		Rover - FOIA90	
GPS	**L1**	**L2**	**L1**	**L2**
East	0.0014 m	0.0000 m	0.0004 m	0.0011 m
North	0.0007 m	-0.0002 m	-0.0012 m	-0.0024 m
Up	0.0894 m	0.1178 m	0.0709 m	0.0622 m

GLONASS	**L1**	**L2**	**L1**	**L2**
East	0.0015 m	-0.0002 m	0.0004 m	0.0014 m
North	0.0010 m	-0.0002 m	-0.0007 m	-0.0019 m
Up	0.0869 m	0.1145 m	0.0708 m	0.0614 m

Coordinates

	Reference - IBAG	Rover - GPS2		Reference - IBAG	Rover - GPS2
Point Role:	Adjusted Least Squares 3D	Fixed PP			
WGS84 Latitude:	4° 25' 40.96541" N	4° 31' 04.39174" N	Easting:	4754324.8857 m	4822954.2866 m
WGS84 Longitude:	75° 12' 53.00491" W	74° 35' 47.12877" W	Northing:	2047662.3050 m	2057416.6212 m
WGS84 Ellip. Height:	1216.0662 m	437.6120 m	Ortho. Height:	1188.6624 m	416.5006 m
WGS84 Cartesian X:	1623166.6264 m	1689023.9261 m			
WGS84 Cartesian Y:	-6149837.6196 m	-6130468.4528 m			
WGS84 Cartesian Z:	489244.3588 m	499089.3523 m			

Baseline Vector and Quality - WGS84

ΔLatitude:	0° 05' 23.42633"	SD ΔLatitude:	0.0004 m		
ΔLongitude:	0° 37' 05.87614"	SD ΔLongitude:	0.0004 m		
ΔHeight:	-778.4542 m	SD ΔHeight:	0.0036 m		
ΔX:	65857.2997 m	SD ΔX:	0.0010 m		
ΔY:	19369.1668 m	SD ΔY:	0.0035 m		
ΔZ:	9844.9935 m	SD ΔZ:	0.0004 m		
Slope Dist.:	69348.9181 m	SD Slope Dist.:	0.0004 m		
M0:	0.4829 m	CQ 1D:	0.0036 m		
Q11:	0.00000450	CQ 2D:	0.0005 m		
Q12:	-0.00001411	CQ 3D:	0.0037 m		
Q22:	0.00005273				
Q13:	0.00000097				
Q23:	-0.00000372				
Q33:	0.00000083				
Frequency:	L1/L2	GDOP:	2.0 - 4.2	GPS SVs:	9/9
Solution Optimisation:	Iono Minimised	PDOP:	1.6 - 3.0	GLONASS SVs:	5/7
Solution Type:	Phase Fixed	HDOP:	0.7 - 1.5	Beidou SVs:	-
		VDOP:	1.3 - 2.7	Galileo SVs:	-
				QZSS SVs:	-
Ephemeris Type:					
GPS	Precise				
GLONASS	Precise				

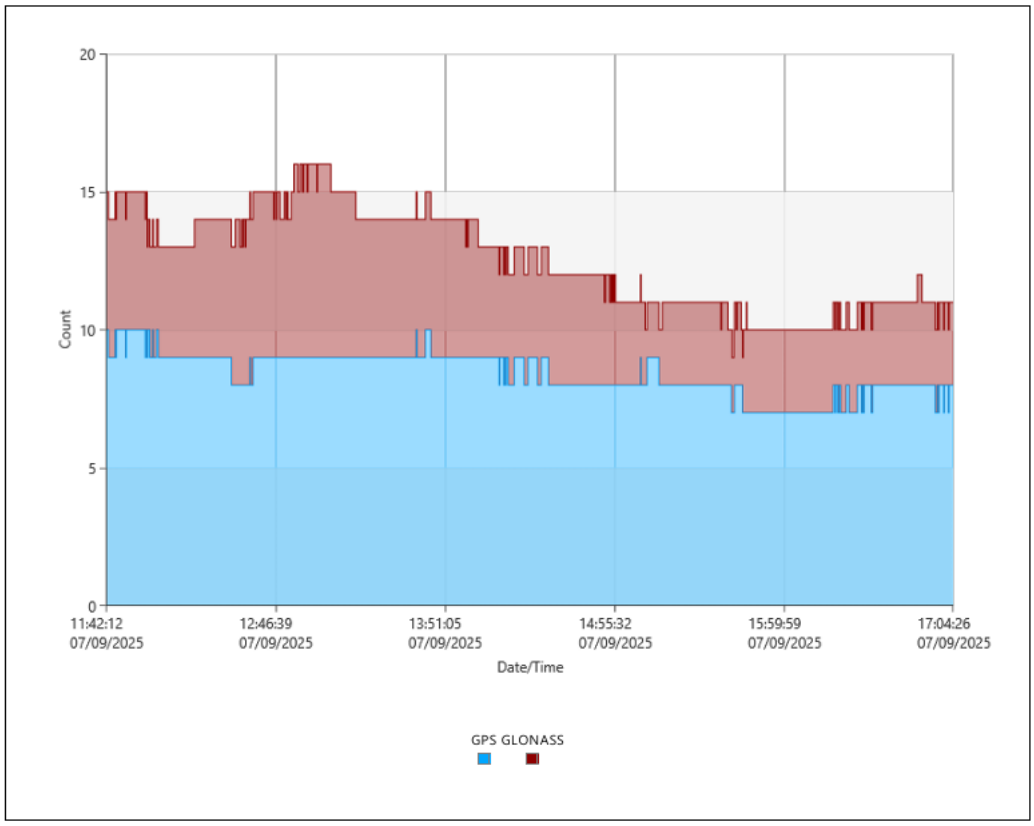
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Processed Date/Time:	10/09/2025 23:16:35

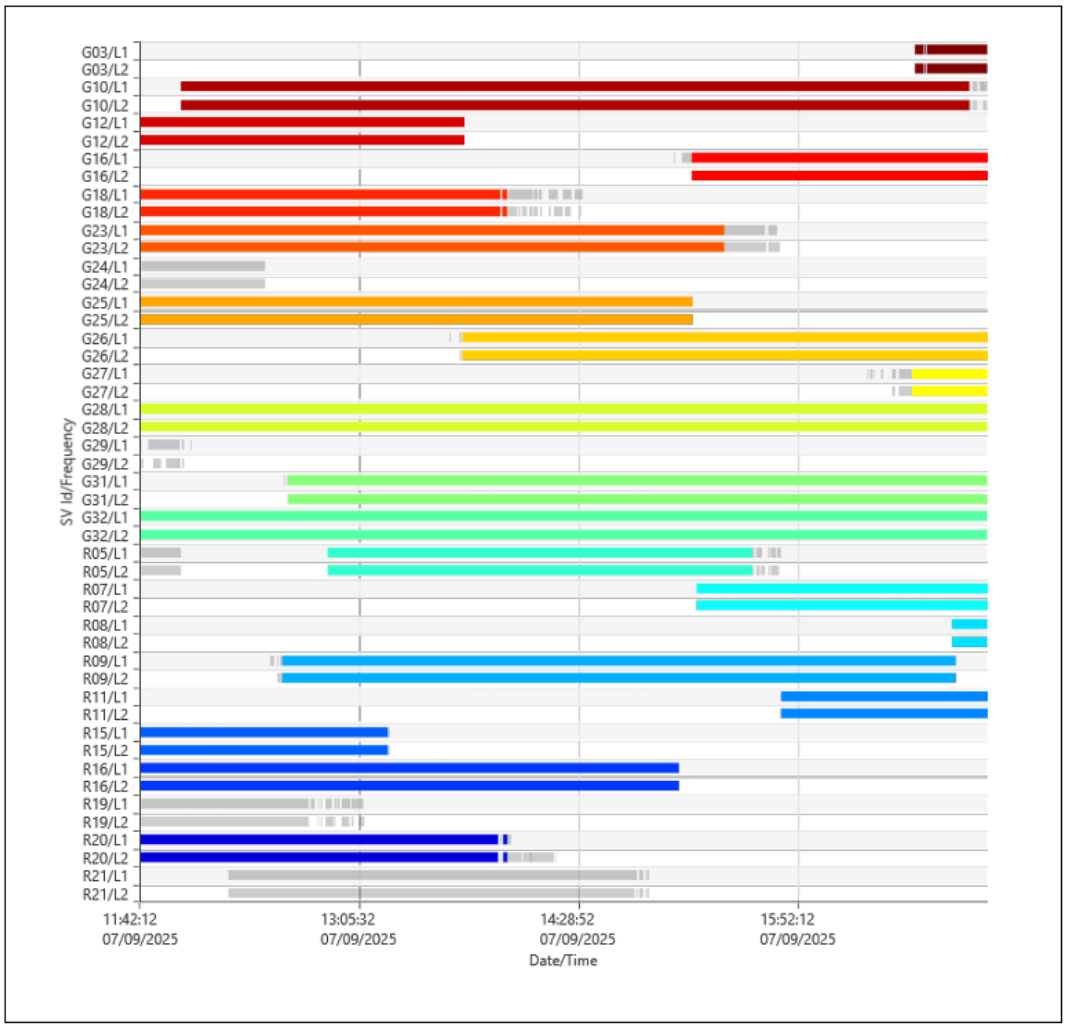
Satellites

Satellite System	Used	Manually Disabled
GPS	G03 G10 G12 G16 G18 G23 G24 G25 G26 G27 G28 G31 G32	-
GLONASS	R05 R07 R08 R09 R11 R15 R16 R19 R20	-
Galileo	-	E07 E08 E13 E15 E18 E19 E21 E23 E26 E27

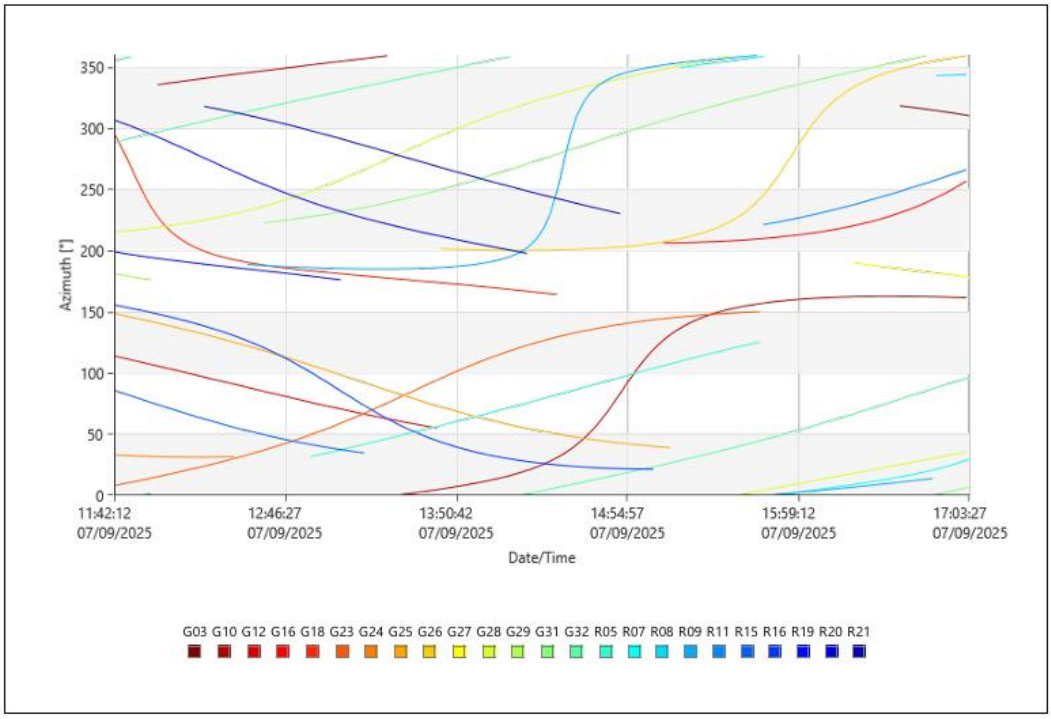
SVs Tracked



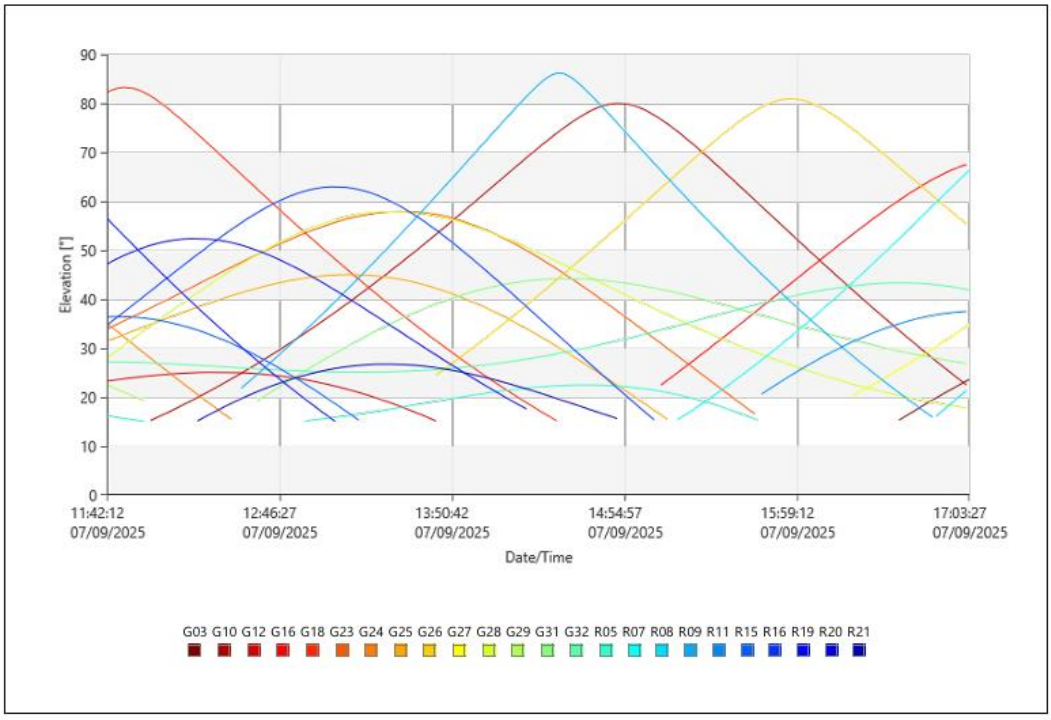
Signals Tracked


G03/L1
G03/L2
G10/L1
G10/L2
G12/L1
G12/L2
G16/L1
G16/L2
G18/L1
G18/L2
G23/L1
G23/L2
G24/L1
G24/L2
G25/L1
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R05/L1
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R08/L1
R08/L2
R09/L1
R09/L2
R11/L1
R11/L2
R15/L1
R15/L2
R16/L1
R16/L2
R19/L1
R19/L2
R20/L1
R20/L2
R21/L1
R21/L2
SV Id/Frequency
11:42:12
07/09/2025
13:05:32
07/09/2025
14:28:52
07/09/2025
15:52:12
07/09/2025
Date/Time

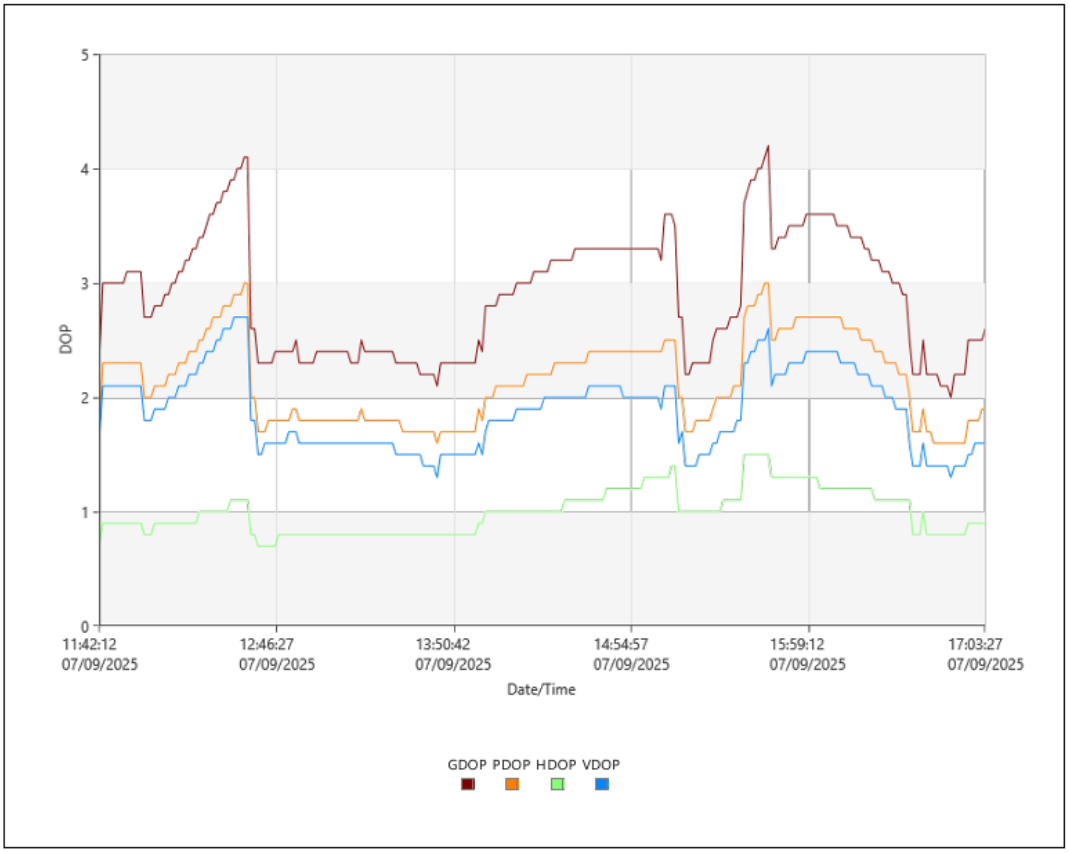
Azimuth



Elevation



DOP



Observation Statistics

Common Epochs: 1290

GPS Observations

Frequency	Used	Rejected
L1	9097	504
L2	9097	449

GLONASS Observations

Frequency	Used	Rejected
L1	4239	1074
L2	4239	1112

Ambiguity Statistics

Number of Ambiguities	GPS	GLONASS	Galileo
Fixed	28	22	0
Total	53	52	0
Independently fixed	486	483	0
Possible independently fixed	529	529	529

Average time between independent fixes: 00:02:30

% of Epochs	GPS		GLONASS	
	L1 [%]	L2 [%]	L1 [%]	L2 [%]
Fixed	97.15	97.43	93.18	82.38
Not fixed	0.74	0.49	0.77	0.95
Not fixed - contradiction	2.10	2.08	6.06	16.67
Not fixed - missing phase	0.00	0.00	0.00	0.00

Status	From Epoch	To Epoch	Duration
Not fixed	**07/09/2025 11:42:12**	**07/09/2025 11:42:27**	**00:00:15**
Fixed	07/09/2025 11:42:27	07/09/2025 17:04:27	05:22:00

Computed Ionospheric Model

Models:	2
Sampling Rate:	30 sec
Height of Single Layer:	350 km

Model 1

Origin Latitude:	4° 25' 40.96541" N	Valid from Epoch:	07/09/2025 06:59:35
Origin Longitude:	75° 12' 53.00491" W	Valid until Epoch:	07/09/2025 12:59:31
Origin Date/Time:	07/09/2025 06:59:35		

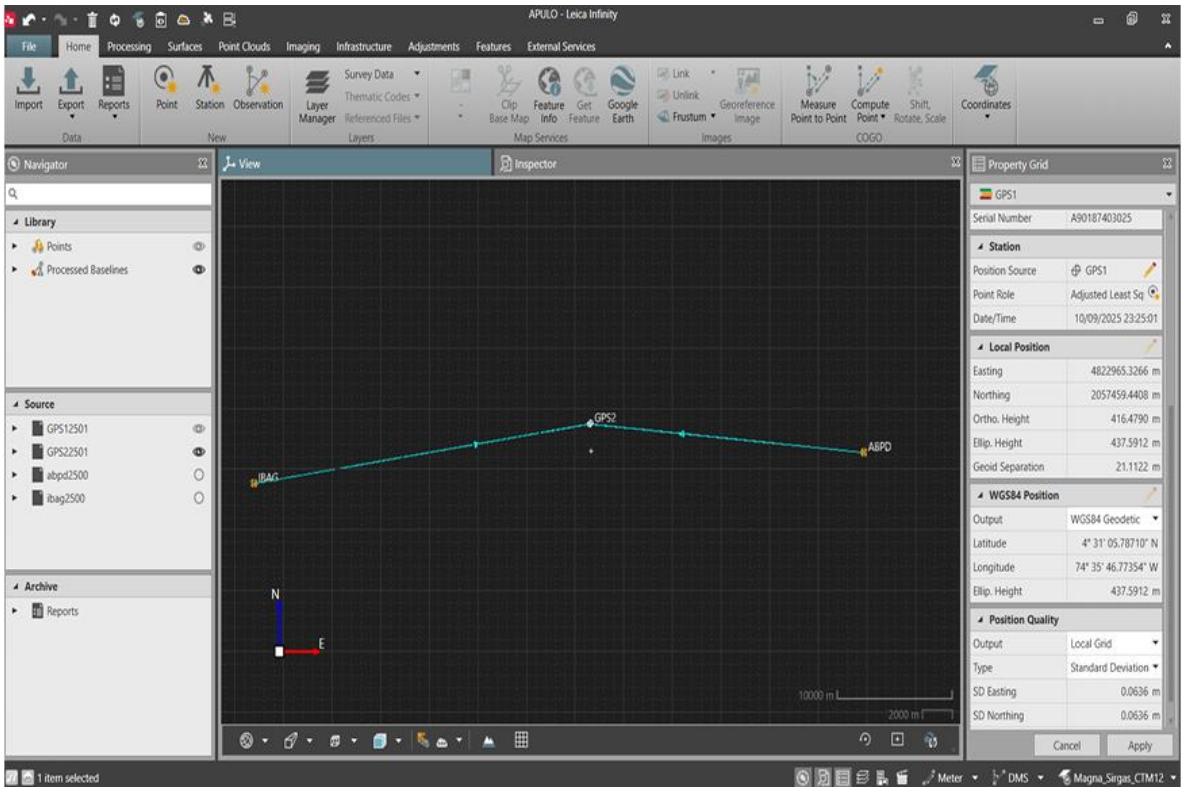
Deg. Latitude	Deg. Time	Value	RMS
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0	1	2.0641820044	0.0136546610
0	2	-0.2862228504	0.0039097640
1	0	-0.3796072595	0.0127576209
1	1	-0.1382937432	0.0063400812

Model 2

Origin Latitude:	4° 25' 40.96541" N	Valid from Epoch:	07/09/2025 12:59:31
Origin Longitude:	75° 12' 53.00491" W	Valid until Epoch:	07/09/2025 18:59:27
Origin Date/Time:	07/09/2025 12:59:31		

Deg. Latitude	Deg. Time	Value	RMS
0	0	4.8674737966	0.0218775776
0	1	0.7798017902	0.0174726253
0	2	-0.5346314967	0.0054099546
1	0	-0.9113969449	0.0137452339
1	1	0.2259372919	0.0076000459

ESQUEMA DE DOBLE DETERMINACION GPS2



REPORTE AJUSTE DE RED

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- when it has to be right

Network Adjustment Report

Report created: 10/09/2025 23:25:31

Project Details

General		Customer Details		Master Coordinate System	
Project Name:	APULO	Customer Name:	-	Coordinate System Name:	Magna_Sirgas_CTM12
Owner:	-	Contact Person:	-	Transformation Type:	-
Lead Surveyor:	DANIEL IVAN SANTOS CERQUERA	Number:	-	Residual Distribution:	None
Date Created:	10/09/2025 20:04:08	Email:	-	Ellipsoid:	WGS 1984
Last Accessed:	10/09/2025 23:14:35	Skype:	-	Projection Type:	Transverse Mercator
Application Software:	Infinity 4.2.1	Website:	-	Geoid Model:	GEOCOL2004
				CSCS Model:	-

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Size:	186.6 MB
Comments:	-

Name:	10/09/2025 23:25:01
Date/Time:	10/09/2025 23:25:01

Processing kernel:	MOVE3 4.6.0

www.MOVE3.com

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Adjustment Settings

General	
Controls:	Constrained
Dimension:	3D
Coordinate system:	WGS84
Height mode:	Ellipsoidal
Confidence Level for Heights - 1D:	99.0%
Confidence Level for Error Ellipses - 2D:	99.0%
Max. number of Iterations:	3
Iteration criteria:	0.0001 m

Standard Deviation Settings

Source of Standard Deviation Settings - TPS:	**Individual**
Source of Standard Deviation Settings - GNSS:	**Use Defaults**
GNSS Baseline (Absolute):	0.0050 m
GNSS Baseline (Relative):	1 PPM
Source of Standard Deviation Settings - Level:	**Individual**
Source of Centring/Height Errors - TPS:	**Individual**
Source of Centring/Height Errors - GNSS:	**Individual**

Testing Criteria

Level of Significance (α, multi-dimensional):	0.08
Level of Significance (α0, one-dimensional):	1.0%
Power of Test (1-β):	70%
σ a-priori:	1.0

Advanced

Use reduced observations:	No
Use scale factor correction:	Ignore
Initial Scale Factor Correction:	0.0 PPM
Use vertical refraction coefficient:	Ignore
Initial Vertical Refraction Coefficient:	0.13

Adjustment Summary

Adjustment

Type:	Constrained
Dimension:	3D
Number of Iterations:	0
Max. coordinate correction in last iteration:	0.0000 m

Stations

Number of (partly) known stations:	2
Number of unknown stations:	2
Total:	**4**

Observations

GNSS coordinate differences:	12 (4 baselines)
Known coordinates:	6
Total:	**18**

Unknowns

Coordinates:	12
Total:	**12**

Degrees of freedom:	**6**
Optimisation criterion v'Pv:	**11.01875**
σ a-posteriori:	**1.355**

Testing

Critical value W-Test:	2.58
Critical value T-Test (2 dimensional):	3.77
Critical value T-Test (3 dimensional):	2.82
Critical value F-Test:	1.88
F-Test:	1.84

Chi Square Test (99.0%)	
Critical value lower bound:	0.11
Critical value upper bound:	3.09
Chi Square Test:	1.84

Input data

Approximate Coordinates

Station	WGS84 Latitude	WGS84 Longitude	Ellip. Height [m]	Description
ABPD	4° 28' 35.64224" N	74° 05' 55.92577" W	2958.3600	Control Fixed 3D
GPS1	4° 31' 05.78710" N	74° 35' 46.77354" W	437.5912	Adjusted Least Squares 3D
GPS2	4° 31' 04.39182" N	74° 35' 47.13096" W	437.7782	Adjusted Least Squares 3D
IBAG	4° 25' 40.96541" N	75° 12' 53.00491" W	1216.0662	Control Fixed 3D

Observations

From Station	Target Point	ΔX [m]	ΔY [m]	ΔZ [m]	SD ΔX [m]	SD ΔY [m]	SD ΔZ [m]
ABPD	GPS1	-53949.6732	-12130.8175	4401.3596	0.0605	0.0605	0.0605

IBAG	GPS1	65866.9927	19375.4060	9887.7280	0.0744	0.0744	0.0744
ABPD	GPS2	-53959.3390	-12137.2602	4358.6592	0.0605	0.0605	0.0605
IBAG	GPS2	65857.2997	19369.1668	9844.9935	0.0743	0.0743	0.0743

Adjustment Results

Adjusted Coordinates

Station	WGS84 Latitude	WGS84 Longitude	Ellip. Height [m]	Corr WGS84 Lat [m]	Corr WGS84 Long [m]	Corr Height [m]
ABPD	4° 28' 35.64224" N	74° 05' 55.92577" W	2958.3600	0.0000	0.0000	0.0000
GPS1	4° 31' 05.78710" N	74° 35' 46.77354" W	437.5912	0.0000	0.0000	0.0000
GPS2	4° 31' 04.39182" N	74° 35' 47.13096" W	437.7782	0.0000	0.0000	0.0000
IBAG	4° 25' 40.96541" N	75° 12' 53.00491" W	1216.0662	0.0000	0.0000	0.0000

Station	Easting [m]	Northing [m]	Ortho. Height [m]	Corr E [m]	Corr N [m]	Corr Height [m]
ABPD	4878135.3644	2052748.0372	2931.1053	0.0000	0.0000	0.0000
GPS1	4822965.3266	2057459.4408	416.4790	0.0000	0.0000	0.0000
GPS2	4822954.2190	2057416.6238	416.6668	0.0000	0.0000	0.0000
IBAG	4754324.8857	2047662.3050	1188.6624	0.0000	0.0000	0.0000

Standard Deviations

Station	SD WGS84 Lat [m]	SD WGS84 Long [m]	SD Height [m]
ABPD	-	-	-
GPS1	0.0636	0.0636	0.0636
GPS2	0.0636	0.0636	0.0636
IBAG	-	-	-

Absolute Confidence Ellipses (Confidence Levels: 2D - 99.0% 1D - 99.0%)

Station	Semi major (a) [m]	Semi minor (b) [m]	SD Height [m]	Orientation (φ) [°]
ABPD	-	-	-	-
GPS1	0.1930	0.1930	0.1639	0
GPS2	0.1930	0.1930	0.1639	45
IBAG	-	-	-	-

Relative Confidence Ellipses (Confidence Levels: 2D - 99.0% 1D - 99.0%)

From	To	Semi major (a) [m]	Semi minor (b) [m]	SD Height [m]	Orientation (ψ) [°]
ABPD	GPS1	0.1930	0.1930	0.1639	85
ABPD	GPS2	0.1930	0.1930	0.1639	-5
IBAG	GPS1	0.1930	0.1930	0.1639	-82
IBAG	GPS2	0.1930	0.1930	0.1639	8

External Reliability

Station	Component	Ext. Rel. [m]	Observation Type	Station	Target
ABPD	EW	-	-	-	-
	NS	-	-	-	-
	Height	-	-	-	-
GPS1	EW	0.2336	DX of Baseline	ABPD	GPS1
	NS	0.2416	DZ of Baseline	ABPD	GPS1
	Height	-0.2329	DY of Baseline	ABPD	GPS1
GPS2	EW	0.2335	DX of Baseline	ABPD	GPS2
	NS	0.2415	DZ of Baseline	ABPD	GPS2
	Height	-0.2328	DY of Baseline	ABPD	GPS2
IBAG	EW	-	-	-	-
	NS	-	-	-	-
	Height	-	-	-	-

Adjusted GNSS Observations

From Station	Target Point	ΔX [m]	ΔY [m]	ΔZ [m]	Res. ΔX [m]	Res. ΔY [m]	Res. ΔZ [m]
ABPD	GPS1	-53949.6483	-12130.7811	4401.3629	-0.0248	-0.0364	-0.0033
IBAG	GPS1	65866.9552	19375.3510	9887.7230	0.0375	0.0551	0.0050
ABPD	GPS2	-53959.3250	-12137.1428	4358.6490	-0.0140	-0.1174	0.0103
IBAG	GPS2	65857.2785	19368.9893	9845.0091	0.0212	0.1775	-0.0155

Adjusted GNSS Observations - continued

From Station	Target Point	SD ΔX [m]	SD ΔY [m]	SD ΔZ [m]	W-Test ΔX	W-Test ΔY	W-Test ΔZ	T-Test
ABPD	GPS1	0.0636	0.0636	0.0636	-0.48	-0.70	-0.06	0.24

IBAG	GPS1	0.0636	0.0636	0.0636	0.48	0.70	0.06	0.24
ABPD	GPS2	0.0636	0.0636	0.0636	-0.27	-2.27	0.20	1.76
IBAG	GPS2	0.0636	0.0636	0.0636	0.27	2.27	-0.20	1.76

Adjusted GNSS Observations - continued

From Station	Target Point	Res. Easting [m]	Res. Northing [m]	Res. Height [m]	Res. 2D [m]	Res. 3D [m]
ABPD	GPS1	-0.0336	-0.0055	0.0282	0.0340	0.0442
IBAG	GPS1	0.0508	0.0083	-0.0426	0.0515	0.0668
ABPD	GPS2	-0.0447	0.0017	0.1100	0.0447	0.1187
IBAG	GPS2	0.0676	-0.0026	-0.1662	0.0676	0.1794

GNSS Baseline Vector Residuals

From Station	Target Point	Adj. Vector	Res. 3D [m]	Res. 3D [ppm]
ABPD	GPS1	55471.5459	0.0442	0.8
IBAG	GPS1	69365.8927	0.0668	1.0
ABPD	GPS2	55478.9763	0.1187	2.1
IBAG	GPS2	69348.8506	0.1794	2.6

Testing and Estimated Errors

Coordinate Tests

Station		MDB	Redundancy	BNR	W-Test	Est Error	T-Test
ABPD	WGS84 Latitude	-	-	-	-	-	-
	WGS84 Longitude	-	-	-	-	-	
	Height	-	-	-	-	-	
IBAG	WGS84 Latitude	-	-	-	-	-	-
	WGS84 Longitude	-	-	-	-	-	
	Height	-	-	-	-	-	

Observation Tests

	Station	Target	MDB	Redundancy	BNR	W-Test	Est Error	T-Test
ΔX	ABPD	GPS1	0.4026 m	40	3.81	-0.48	-	0.24
ΔY			0.4026 m	40	3.81	-0.70	-	-
ΔZ			0.4026 m	40	3.81	-0.06	-	-
ΔX	IBAG	GPS1	0.4026 m	60	2.52	0.48	-	0.24
ΔY			0.4026 m	60	2.52	0.70	-	-
ΔZ			0.4026 m	60	2.52	0.06	-	-
ΔX	ABPD	GPS2	0.4025 m	40	3.81	-0.27	-	1.76
ΔY			0.4025 m	40	3.81	-2.27	-	-
ΔZ			0.4025 m	40	3.81	0.20	-	-
ΔX	IBAG	GPS2	0.4025 m	60	2.52	0.27	-	1.76
ΔY			0.4025 m	60	2.52	2.27	-	-
ΔZ			0.4025 m	60	2.52	-0.20	-	-

Antenna Height Tests

Station	Target	Date/Time	Antenna MDB	Antenna W-Test	Est. Antenna Error
ABPD	GPS1	07/09/2025 11:35:28	0.4026 m	0.54	-
IBAG	GPS1	07/09/2025 11:35:28	0.4026 m	-0.55	-
ABPD	GPS2	07/09/2025 11:41:58	0.4025 m	2.12	-
IBAG	GPS2	07/09/2025 11:41:58	0.4025 m	-2.14	-

INFORMACION PROCESADA

Imagen 23. *Plano vista en planta*

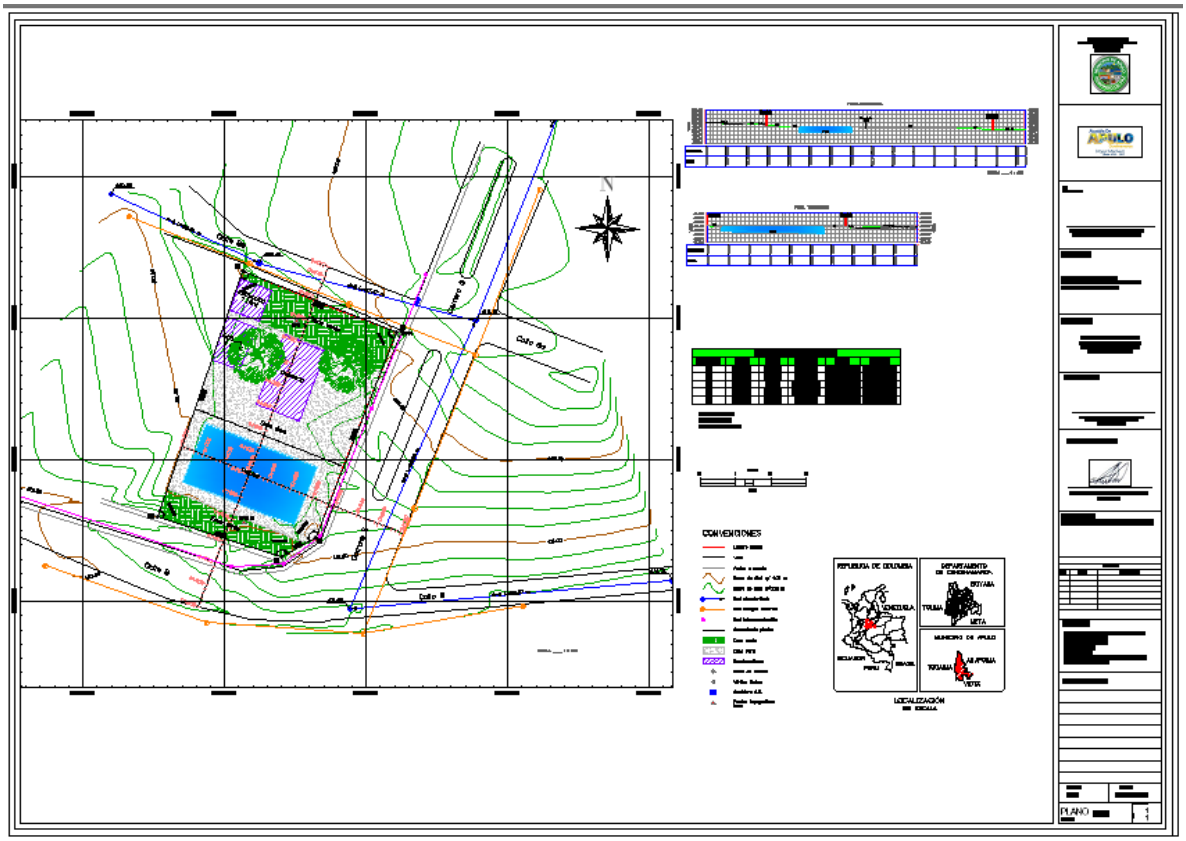
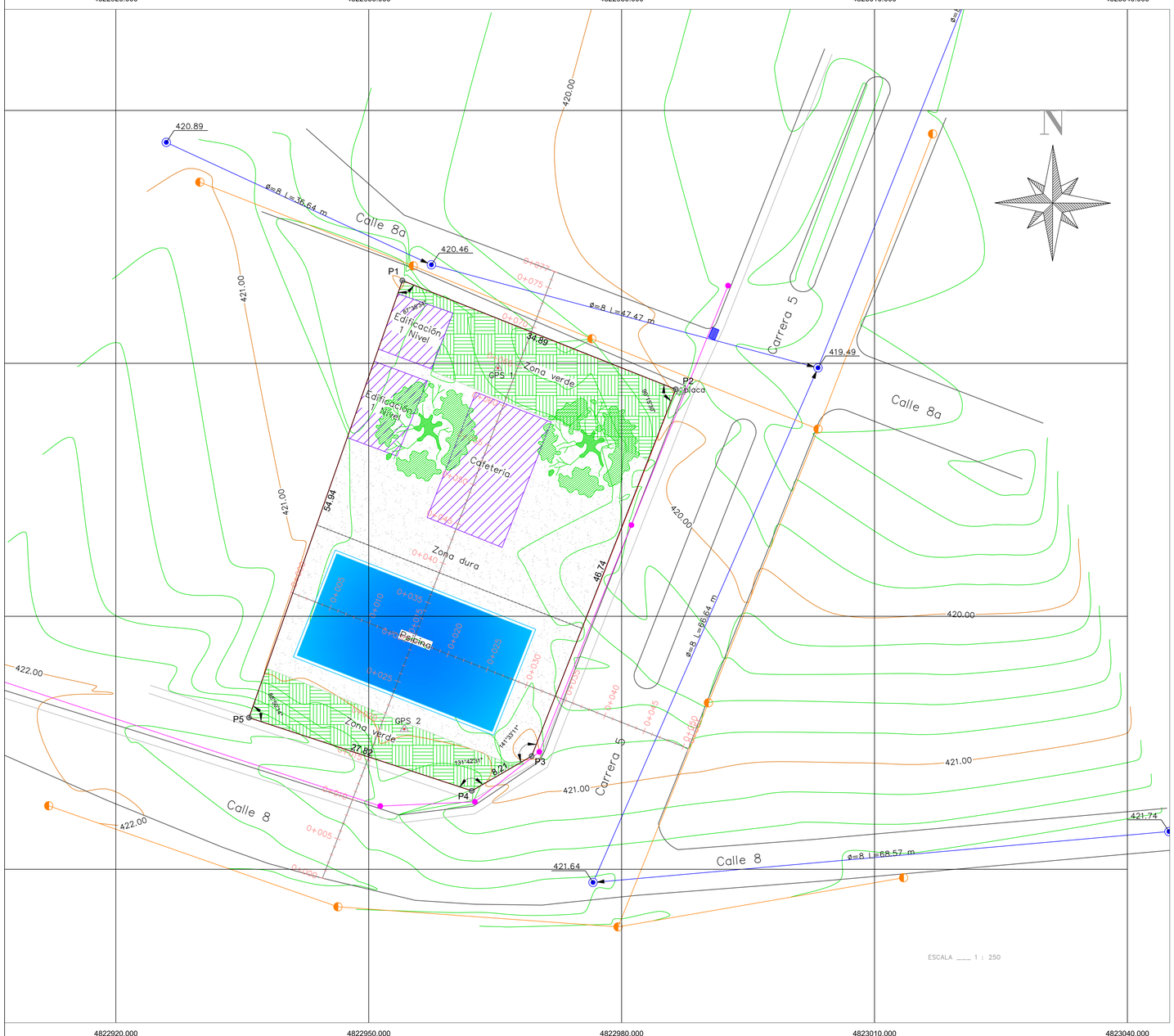
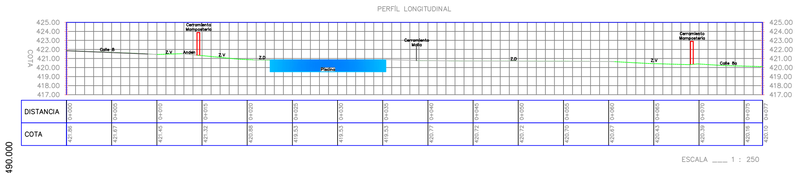


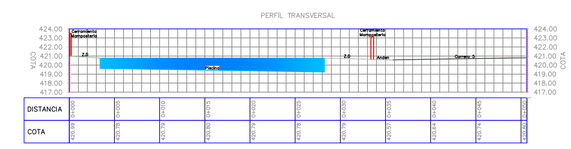
Tabla 7. *Puntos de Lindero Magna_EPSG9377 época 2018.0*

CUADRO DE CONSTRUCCION					
VERTICE	LADO	DIST.	ANGULO	ESTE	NORTE
P1	P1 - P2	34.895	87°38'34"	4822953.994	2057469.828
P2	P2 - P3	46.735	90°15'30"	4822986.416	2057456.926
P3	P3 - P4	8.212	141°33'11"	4822969.332	2057413.425
P4	P4 - P5	27.821	131°42'31"	4822962.228	2057409.305
P5	P5 - P1	54.944	88°50'14"	4822935.796	2057417.985

- En total se calculó un área de 1811.486 metros cuadrados (0 ha + 1811.486 m2)







CUADRO DE CONSTRUCCION					
VERTICE	LADO	DIST.	ANGULO	ESTE	NORTE
P1	P1 - P2	34.895	87°38'34"	4822953.994	2057469.828
P2	P2 - P3	46.735	90°15'30"	4822986.416	2057456.926
P3	P3 - P4	8.212	141°33'11"	4822969.332	2057413.425
P4	P4 - P5	27.821	131°42'31"	4822962.228	2057409.305
P5	P5 - P1	54.944	88°50'14"	4822935.796	2057417.985

Area: 1811.486 m²
Area: 0.18115 ha
Perimetro: 172.608 ml

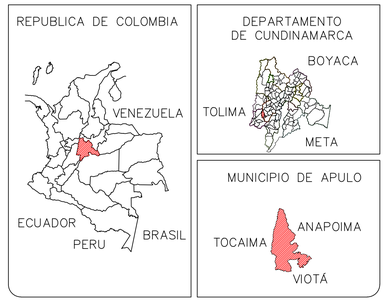
COORDENADS PUNTOS TOPOGRAFICOS BASE EPOCA 2018.0

PUNTO	ESTE	NORTE	COTA
GPS01	4822965.327	2057459.441	416.479
GPS02	4822954.219	2057416.624	416.6668

Meters
7.5 0 7.5 15
1:250

CONVENCIONES

- Lindero predio
- Vías
- Anden o cuneta
- Curva de nivel c/ 1.00 m
- Curva de nivel c/0.20 m
- Red alcantarillado
- Red energía eléctrica
- Red telecomunicación
- Cerramiento piscina
- Zona verde
- Zona Dura
- Construcciones
- Placa de amarre
- Vértice lindero
- Sumidero A.LL
- Puntos topograficos base



LOCALIZACIÓN
SIN ESCALA

REPUBLICA DE COLOMBIA
DEPARTAMENTO DE CUNDINAMARCA
MUNICIPIO DE NILO
NIT. 890680235-7

Alcaldía De APULO Cundinamarca
José Ignacio Santoya Chaparro
Alcalde 2024 - 2027

V°B°
Alcalde Municipal

MUNICIPIO DE APULO- CUNDINAMARCA
JOSé IGNACIO SANTOYA CHAPARRO

UBICACION:

CR. 5 N°8-27 BARRIO CENTRO
N° CATASTRAL 25-599-01-00-0058-0001-000
M. INMOBILIARIA N° 166-104630

PROYECTO:

CONSTRUCCIÓN DE COMPLEJO RECREO-DEPORTIVO-CULTURAL CENTRO FELICIDAD, MUNICIPIO APULO, CUNDINAMARCA

SUPERVISOR:

ING. JOHANA PAOLA CASALLAS RODRIGUEZ
SECRET. DESARROLLO SOSTENIBLE
ALCALDÍA DE APULO

LEVANTO Y DIBUJO:

DANIEL IVAN SANTOS CERQUERA
TOPOGRAFO
T.P 01-18631

APROBACION
SEC. DE DESARROLLO SOSTENIBLE

REVISIONES		
REV	FECHA	MODIFICACIÓN

CONTIENE:

PLANTA LEVANTAMIENTO TOPOGRÁFICO
PERFIL LONGITUDINAL
PERFIL TRANSVERSAL
CONVENCIONES
LOCALIZACIÓN
CUADRO DE COORDENADAS DE LINDERO
CUADRO DE LINDEROS

OBSERVACIONES

ESCALA	FECHA
	Agosto de 2024

PLANO TP-01
PLANO No.

PLANCHA No. 1
D E 1