



DIRECTORATE GENERAL, CRPF
EAST BLOCK-7, SECTOR-1, R.K PURAM, NEW DELHI-66
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No. B.V-7/2025-26-C-(Mapping)-QR CELL

Dated, the 12 Feb'2026

To

1. The DsG: AR, BSF, CISF, ITBP, NSG, SSB and BPR&D
2. Director, DCPW

Subject: QRs/TDs OF "SMALL UAV FOR 2D & 3D MAPPING WITH OPTIONAL ISR PAYLOAD" REGARDING.

I am directed to refer to the subject mentioned above and to say that the QRs/TDs of "**SMALL UAV FOR 2D & 3D MAPPING WITH OPTIONAL ISR PAYLOAD**" have been approved by the DG CRPF after due deliberations and as per recommendations of Sub-Group of Technical Experts from CAPFs and experts from DCPW.

This is for favour of information and further needful please.

Encl:-As above


(Megh Raj)

DIG (Equipment)
Communication & IT Branch
Directorate General C R P F

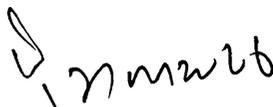
No. B.V-7/2025-26-C-(Mapping)-QR CELL

Dated, the 12 Feb'2026

Copy to:-

1. Mr. Deepak Kumar, Technical Director, North block, MHA (e-mail ID: deepakg@gov.in) with request to upload the QRs/TDs of "Small UAV for 2D & 3D Mapping with Optional ISR Payload" on MHA website please.

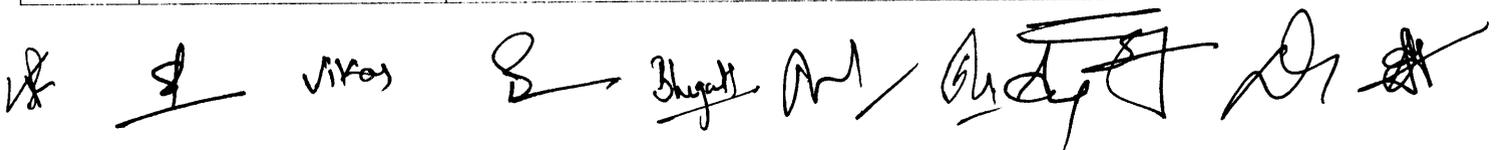
Encl:-As above


(Megh Raj)

DIG (Equipment)
Communication & IT Branch
Directorate General C R P F

QRs/TDs of Small UAV for 2D/3D Mapping with Optional ISR payload

S N	Parameter	Specifications	Trial Directives
1	UAV (As a system)		
1.1	Aerial Vehicle-01 No		BOO will check practically.
1.2	Ground Control Station including DGPS (Differential-GPS)- 01 No		
1.3	Pay load assembly (a) 2-D mapping payload (b) 3-D mapping payload (c) ISR Payload (Day & Night Camera) ((a) (b) & (c) as per user requirement, single or combination of payloads) With Capability to plug & play any of the selected payloads		
1.4	Data link Equipment/ Antenna -01 No		
1.5	Battery/Battery set for each Aerial Vehicle-01 No		
2	Drone Characteristics		
2.1	Nomenclature	Small UAV (60 Minutes \pm 5 min), 2 to 10 KG (MTOW)	BOO will check practically.
2.2	Design	Rotorcraft	BOO will check practically.
2.3	Role	2D/3D Mapping (as per user requirement) And ISR (optional)	BOO will check practically.
2.4	Launch and recovery mode (In meter)	Automatic vertical takeoff and landing (VTOL) within the area of 10X10 m	BOO will check practically.
2.5	Aural Signature (in dB)	$\leq 40 \pm 10\%$ dbs at 300 m above AGL	The firm will submit certificate of Govt Lab. Or NABL accredited laboratory/or any other authorized testing agency
2.6	Propulsion system	Electrical with rechargeable batteries	BOO will check practically
2.7	Payloads carrying capability	Mapping payload And ISR Payload (Optional)	BOO will check practically.



S N	Parameter	Specifications	Trial Directives
2.8	Flight modes	a) Fully autonomous mode b) Fully autonomous and stabilized c) Hover at defined waypoint d) Waypoint navigation (pre-defined as well as dynamically adjustable waypoints during flight) e) Target tracking mode f) Real time target tracking of designated static and moving targets g) Should be controllable in real time from the GCS up to recovery	BOO will check practically.
2.9	Endurance (In minutes)	Min. 60 Minutes \pm 5 Minute with 1000 mtr AMSL (Reduction in 10 % of endurance of every 1000 meter.)	BOO will check practically
2.10	Minimum Operating altitude above ground level (AGL) (In meter)	1000m AGL (Above Ground Level) or more.	BOO will check practically capability of UAV once during flight.
2.11	Maximum Launch altitude above mean sea level (AMSL) (in meter)	4000m AMSL (Above Mean Sea Level) or more	Firm will submit OEM certificate
2.12	Operating wind conditions (in km/h)	a) Take off: 35 km/h or more b) Landing: 35 km/h or more c) Operate: 35 km/h or more	Firm will submit OEM certificate.
2.13	Cruise Speed (in km/h)	Minimum 45 Kmph or more	Firm will submit OEM certificate.
2.14	Collision Avoidance sensor	Should be available during take-off and landing	BOO will check practically and firm will submit OEM certificate.
2.15	Range of Live Transmission (LOS + Interference free)	For ISR: - Min 5 kms for live transmission	BOO will check practically


 A series of handwritten signatures and initials in black ink, including a circled 'V' and the word 'Budgets' written in cursive.

S N	Parameter	Specifications	Trial Directives
3	Failsafe features	a) Automatic change to recovery mode after 10 seconds on communication loss, again on mission if communication restore	BOO will check practically and firm will produce OEM certificate
		b) Automatic Return to Home/Land on battery low/imbalance/sudden voltage drop	
		c) Multiple GNSS on-board for failure redundancy	Firm will submit OEM certificate.
		d) Warning on exceeding Wind limit or gust.	BOO will check practically and firm will submit OEM certificate.
		e) Warning on exceeding the UAV health parameters (Temperature, vibration and throttle limit of the system)	
4 ISR Payload characteristics (Optional)			
4.1	Payloads Required	(a) Electric Optic (EO) for day (b) Thermal Imager (TI) for night payload (c) Separate EO & TI both (d) Integrated EO & TI (As per user requirement)	To be physically checked and verified by BOO.
4.2	Electro optic (EO) daylight Payload	(a) UAV should transmit real time imagery to GCS	To be physically checked and verified by BOO.
		(b) Resolution: 1920 X 1080 or better	Firm will submit OEM certificate.
		(c) Optical zoom: - 20X continuous or more with minimum: NFOV $\leq 5^\circ$, maximum: WFOV $\geq 45^\circ$ (wide field).	BOO will check practically & firm will submit OEM certificate
		(d) Digital Zoom: - 4X or more	BOO will check practically & firm will submit OEM certificate
4.3	Thermal imager (TI) night payload	(a) Resolution: 640 X 480 pixels or better	Firm will submit OEM certificate.
		(b) Digital Zoom: 4X or more	To be physically checked and verified by BOO.
		(c) White and Black hot modes	To be physically checked and verified by BOO

S N	Parameter	Specifications	Trial Directives		
4.4	PAN	350° PAN during flight or more	To be physically checked and verified by BOO		
4.5	Tilt	0 to 90° during flight	To be physically checked and verified by BOO		
4.6	Stabilization	Quality of video should not be affected by UAV vibrations	To be physically checked and verified by BOO		
4.7	Target Detection, Recognition, Identification	Day Payload		Board will check practically. Detection- Ability to distinguish an object from background. Recognition- Ability to classify the object class (Animal, Human, Vehicle, Boat etc) Identification- Ability to describe the object in details (man with weapon, hat, Uniform / Colour of clothes, type/ Colour of vehicles	
			Vehicle size (4.5 m X 1.5m)		Group of 3-4 People
		Detection	4000M		3000M
		Recognition	3000M		1500M
		Identification	1500M		1000M
		Night Payload			
		Detection	1250M		500M
Recognition	700M	400M			
5	PAYLOAD specification for mapping				
A.	For 2D mapping payload				
i	Minimum 64 GB of internal storage with at least 256 GB of external storage in pair		BOO will check practically and firm will submit OEM certificate		
ii	Resolution – 42 MP or more as per user requirement High Resolution Camera: 42-61 Mega Pixel full frame CMOS sensor.		firm will submit OEM certificate		
iii	GSD-5 cm at orthomosaic @400 mtr AGL or GSD < 2 cm/pixel in Orthomosaic @100 mtr AGL		firm will submit OEM certificate		
iv	Accuracy of 15 cm at X & Y axis and 30 cm at Z axis at 400m AGL RTK/PPK GNSS Module: cm level (1-5 cm) Absolute accuracy for Georeferencing imaging without extensive ground control points		BOO will check practically and firm will submit OEM certificate		
v	Swappable (lens as per user requirement)		BOO will check practically		

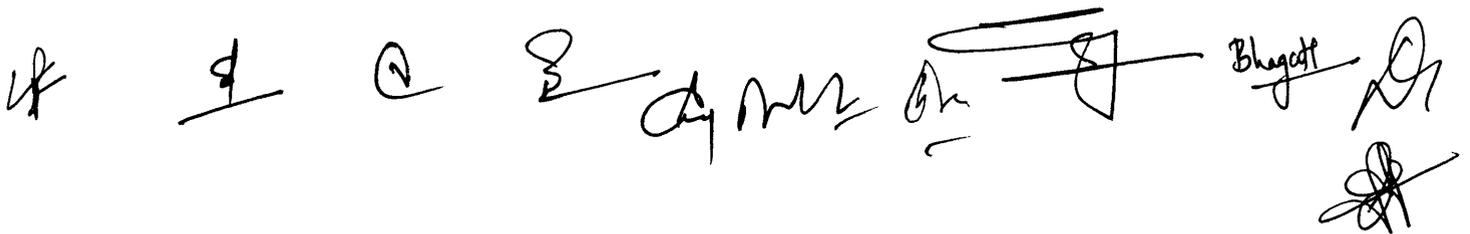

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S N	Parameter/ Specifications	Trial Directives
B	For 3D Mapping Payload	
i	Minimum 64 GB of internal storage with at least 512 GB of external storage in pair	BOO will check practically and firm will submit OEM certificate
ii	Minimum 24 X 5 Megapixel	Firm will submit OEM certificate
iii	One nadir and 4 Cameras at 45 degrees in four direction	Firm will submit OEM certificate
iv	5 cm GSD in Orthomosaic at 400 mtr AGL or GSD < 2 cm/pixel in Orthomosaic at 100 mtr AGL	Firm will submit OEM certificate
v	Accuracy of 15 cm at X & Y axis and 30 cm at Z axis RTK/PPK GNSS Module: cm level (1-5 cm) Absolute accuracy for Georeferencing imaging without extensive ground control points	BOO will check practically and firm will submit OEM certificate
6	Ground control station characteristics	
6.1((Opt ion- 1))	(a)GCS should be portable minimum 7-inch display with rugged IP 55 tablet/laptop which is compatible with GCS for surveillance Or (b)GCS should be portable minimum 10-inch display with rugged IP 65 tablet/laptop which is compatible with GCS for surveillance Or (As per user requirement)	Firm will submit certificate of Govt. Lab. or NABL/ILAC accredited laboratory.
6.2 (Op tio n- 4)	Computing Hardware (as per user requirement) for (a) & (b)	
	CPU	CPU- Processor speed minimum 3.3 GHz or better
	Storage	1 TB for Laptop or 500 GB for tablet
	RAM Memory	8 GB or more
	Display	10 inch or more – 1920 × 1080 (Full HD) or better sunlight readable screen with minimum 1000 nits, anti-glare or As per user requirement
6.3	Battery operation	Minimum 150 minutes at peak utilization
6.4	Battery charger	Suitable battery charger using normal commercial supply with Battery charging time of not more than 3 hours.

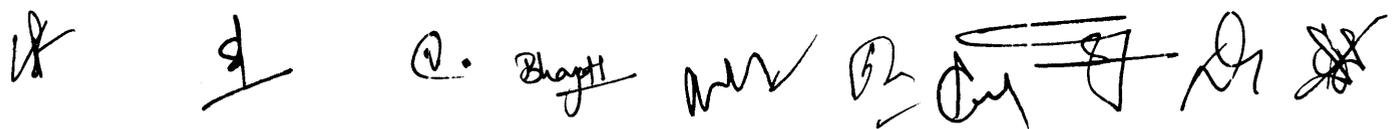
S N	Parameter	Specifications	Trial Directives
6.5	Data portability	Suitable port for taking data and compatible with GCS	
6.6	Capability	a) Transmit control commands to UAV b) Receive UAV flight and propulsion parameters c) Capability to control UAV while on the move. d) Capable to storing 100 or more flight routes with each route having capacity to configure minimum 70 waypoints in GCS	BOO will check practically and firm will also submit OEM certificate.
6.7	GCS application software (Mission planning software)	a) Able to control all aspect like pre-flight checks, self-tests, control of takeoff/landing payloads, Output: go/no go. b) The software should have following mission information: - <ul style="list-style-type: none"> i. Coordinate of target ii. Target distance iii. AV Co-ordinates iv. Distance of AV from GCS v. AV Speed vi. Mission time vii. Payload looking angle viii. Communication link status ix. GPS Status x. Health status of AV battery xi. UAV heading /true North indication xii. Bearing (Azimuth) of UAV from GCS. xiii. EXIF Tagging xiv. Switchable between 2D/3D views (DEM view), capability to tilt/rotate 3D maps as per user input. 	BOO will check practically and firm will also submit OEM certificate.


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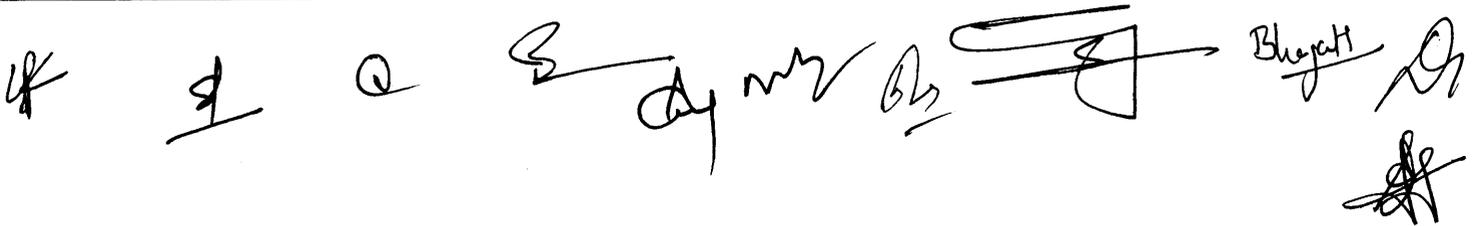
S N	Parameter	Specifications	Trial Directives
		xv. Perpetual proprietary software of the system product support for minimum 5 years. xvi. Terrain following feature. With Provision for inclusion / overlaying of DEM xvii. Side and front overlap feature. xviii. Mission path automatic adjustment based on side and front overlap values xix. System should generate safe landing path as per available / uploaded DEM xx. Flight log analysis software/feature should also be provided with GCS	BOO will check practically and firm will also submit OEM certificate.
6.8	Map formats	a) Should have the capability to integrate geo-referenced raster maps provided in commonly Digital formats as per user requirement. b) Ability to display 3D maps with the digital terrain data provided. Option to switch between 2D and 3D maps in real time.	Board will check practically and firm will also submit OEM certificate.
6.9	Processing kinematics	Post processing kinematics or real time kinematics as per user requirement. Geo referencing software with perpetual license	Firm will submit OEM certificate


 A series of handwritten signatures and initials are present at the bottom of the page. From left to right, there are several distinct marks, including a large '4', a signature that appears to be 'I', a circled 'Q', a signature that looks like 'S', a signature that looks like 'A', a signature that looks like 'Bhagat', and another signature.

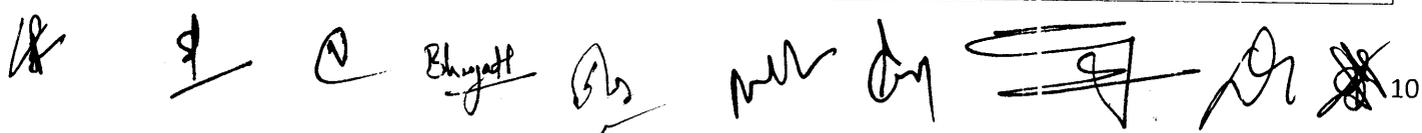
S N	Parameter	Specifications	Trial Directives
7	MAPPING: Software specification for processing and analytics (Optional) (Quantity as per user requirement)		
7.1	Software should be able to generate and display Orthomosaic, DSM, DTM, Contours and Point Cloud outputs.		To be physically checked and verified by BOO and Firm will also submit OEM certificate.
7.2	Software should have capability to compute 3D tie points from overlapping images and generate and export point cloud as a LAS and LAZ file.		
7.3	Software should provide access to necessary base maps and terrain maps		
7.4	Software should support importing and processing GCPs (Ground Control Points) and Check points.		
7.5	Software should support displaying photos at location over base maps.		
7.6	Software should have options to process for Orthomosaic, Point cloud in different qualities		
7.7	Software should have the capability to customize and save the custom settings for data processing and also support automatic processing.		
7.8	Software should support uploading and downloading overlays such as .shp/kml/dwg etc.		
7.9	Software should allow user to input values geolocation accuracy values for RTK or PPK corrected images.		
7.10	Software should provide tools such as symbols, arrows, points, lines and polygons to create markups.		
7.11	Software should support generation and download of High-quality 3D model in OGC compliant format.		
7.12	There should be a facility to measure distances, areas, volumes and heights of features.		
7.13	Software should have capability to perform interactive perspective viewing, including PAN and zoom, rotate, and tilt.		
7.14	Software should allow downloading of Ortho-mosaic, DSM and DTM in TIF format		
7.15	Software should allow downloading of contours and other annotations in SHP/DXF formats		
7.16	Software should have perpetual license policy		


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S N	Parameter	Specifications	Trial Directives
8	Communication Link (as per user requirement)		
8.1	Communication link equipment capability	i) Transmit control commands from GCS to UAV ii) Transmit parameter of UAV and payload to GCS	BOO will check practically.
8.2	Data link encryption	256 bit or better AES.	Firm will submit OEM certificate
9	General System requirements		
9.1	Weight (In kgs)	Complete weight of the UAV system not more than 50 kg in three or four bags (as per user requirement) IP 66 backpacks (includes: Aerial vehicle - 01 Payload - 01 Spare Battery- 01 Set GCS & Base Station - 01 Data link equipment/ Antenna - 01 Cables/spares) or as per user requirement	BOO will check practically.
9.2	Assembly/ Disassembly time	Up to 20 minutes with 2 personnel	
9.3	Environmental conditions for operation and storage	The UAV and associated systems should operate and stored at following environment conditions. i) Damp heat: 40°±2°C at RH not less than 90% as per JSS 55555 or equivalent standard ii) Starting operating temperature & Storage temp: -10°C to +55°C with ±10%. iii) Ability to withstand dust, drizzle and humid conditions	Firm will submit certificate of Govt lab or NABL accredited laboratory
9.4	IP (Ingress Protection) of the UAV	IP 54 or better	


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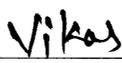
S N	Parameter	Specifications	Trial Directives
9.5	Battery of AV	i. Lithium/sodium/latest technology battery pack should have BMS with back up of minimum 60 minutes \pm 5 minutes ii. Life of Battery minimum 300 charging cycles or 2 year whichever is earlier. iii. Battery life cycle should not be programmed in BMS	Firm will submit OEM Certificate.
9.6	Battery charger of AV battery	Suitable universal battery charger to charge the batteries within two to three hours	BOO will check practically and firm will submit OEM certificate.
9.7	Accessories	i. Field repair kit:1 Nos ii. Lithium based battery packs: 2 Nos iii. Spare propeller set: 1 Complete set iv. Spare landing gear sets: 1 Complete set v. Associated cables & mounting: 1 Set vi. User, technical & maintenance manual:1 set vii. Water resistance (IP 66) back packs to carry UAV along with accessories - 02 Nos viii. Rugged, Compact and light weight transportation box- 02 Nos ix. PPK base station (DGPS) and accessories	BOO will check practically BOO will check practically Firm will submit certificate of Govt lab or NABL/ILAC accredited laboratory BOO will check practically BOO will check practically and Firm will submit OEM certificate
10	Miscellaneous requirement		
10.1	Total technical life	Minimum 1000 landings	Firm will submit OEM certificate
10.2	Total product support	5 years or more as per user requirement.	Firm will submit OEM certificate
10.3	Manufacture recommended list of spares (MRLS) with cost	Should be provided.	BOO will check practically and firm will submit OEM certificate


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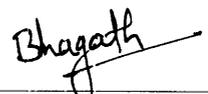
S N	Parameter	Specifications	Trial Directives
10.4	Warranty	02 years or more (as per use requirement)	Firm will submit OEM certificate.
11	Additional Requirement (optional as per user requirement)		
11.1	Resistance against jamming (Optional as per user requirement)	a) GNSS denied return to home - Autonomous and safe return to home in case of GNSS loss or jamming, both during day & night, within a landing area of 10m x 10m	BOO will check practically as per the extent possible further Firm will also submit OEM certificate.
		b) EW and cyber hardened	BOO will check practically as per the extent possible further Firm will also submit OEM certificate.
		c) Auto Channel Selection - System should select best channel of operation automatically both pre-flight and during flight	BOO will check practically as per the extent possible further Firm will also submit OEM certificate.
		d) Frequency Hopping to improve Jamming resistance - System should automatically and continuously hop between 4 or more user selectable channels to improve resistance against communication jamming	BOO will check practically as per the extent possible further Firm will also submit OEM certificate.
11.2	Endurance when equipped with Resistance against jamming feature	Min endurance: 45 minutes or more	BOO will check practically
11.3	Training simulator (Optional as per user requirement)	Suitable simulation software module to be provided for operator training. The operator should be able to practice. 1. Doing pre-flight checks, 2. Take-off, landing, 3. Creating waypoints, flight plans, 4. Executing various flight modes, 5. Checking payload viewing coverage area and drone coverage area, 6. Drawing polygons for obstacle, no-fly zones, and geofences	BOO will check practically

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S N	Parameter	Specifications	Trial Directives
		7. See simulated telemetry parameters 8. Load different geographical maps with ability to switch between 2D and 3D views etc.	BOO will check practically
11.4	Onboard image processing / stitching (Optional as per user requirement)	System will be capable to provide georeferenced Orthomosaic by the time or within half an hour of landing. Minimum Coverage Area should not be less than 10 Hectares (Ha) and Ground Sample Distance (GSD) up to 5cm.	BOO will check practically


W/O Vikas Godara
Assam Rifles

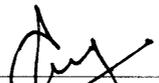

Laljee Ram
JAD, DCPW

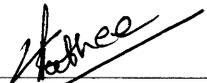

Bhagath. R
AC (GD), SSB

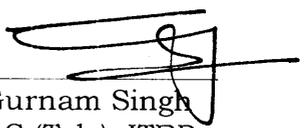

Shantanu Singh
AC, CISF

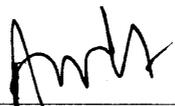

Dinesh S.A
AC (UAV), CRPF


Aby Thomas
AC (GIS), CRPF

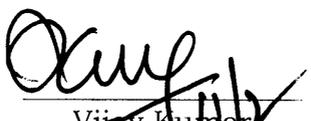

Abhimanyu Yadav
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NSG


Gurnam Singh
DC (Tele), ITBP


Anil Kumar Rajput
DC(Ops-Tech), BSF


Megh Raj
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Vijay Kumar
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Zaki Ahmad, IPS
SDG (ADM), CRPF

Approved/ Not Approved


Gyanendra Pratap Singh, IPS
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