

Test Methods for Evaluating Aerial Drones Safety | Capabilities | Proficiency RobotTestMethods.nist.gov



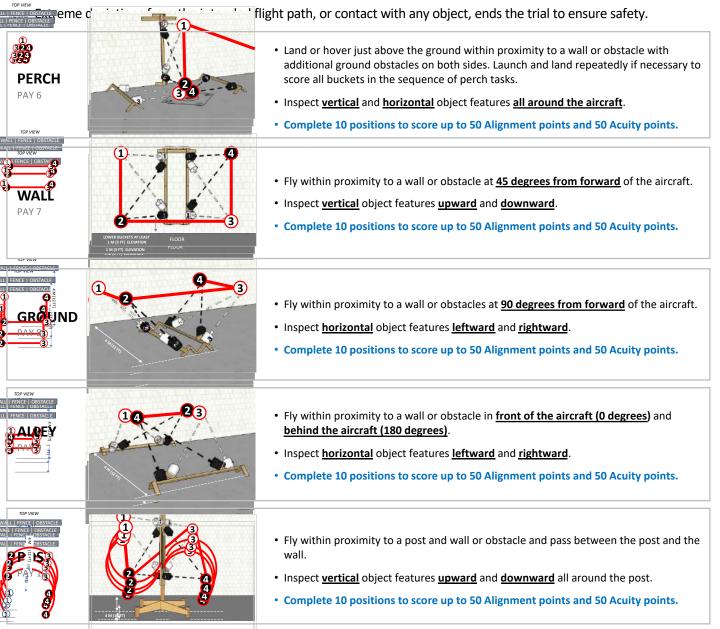
VERSION 2023A



## LEVEL 4OBSTRUCTEDPAYLOAD FUNCTIONALITY

Perform 5 different flight paths to triangulate around the dual bucket rails. Each flight path includes alignments with perpendicular buckets then angled buckets using zoom and exposure control to identify recessed targets.

- All sequences have 10 positions with 20 buckets to score: 1234-321-234 (forward-reverse-forward)
- Score ALIGNMENT POINTS by capturing a SINGLE IMAGE of the inscribed rings to verify alignments during or after the trial: UNBROKEN RINGS (5 pts), BROKEN RINGS (1 pt).
- Score ACUITY POINTS by calling out the 5 increasingly small VISUAL ACUITY TARGET GAPS (1 pt each).
- Start timer at launch and end after the last task is completed. Trial time limits are typically 5 minutes each (25 minutes to complete all 5 tests) although organizations may set their own trial time limits and passing scores.



4	xtensions	amaland Security Applications; botTestMethods.nist.gov	M International Standards Committee on Ho Response Robots (ES4.09)   Website: Rob	<sup>2</sup>		BACK TURNED Scandard I ASTM INTER Respo	lest (vietnoos for Small Unmanned Aircrart Systems actors/Stahdards Committee on Homeland Security Applications; inse Robots (ES4.09)   Website: RobotTestMethods.nist.gov
3(2)			tional bucket stands, a measuring taps h stand include:	Bucket Stands Each Iane uses (4) comni-dire Launch/Land Platform, and a centerline. The parts for eac		ASD )	A Science and
	mery (	6	(8in diameter)	<ol> <li>4x4x5in center post</li> <li>2x4x12in legs with 45di</li> <li>2-gallon white buckets</li> <li>3in screws to affix the )</li> </ol>	on Facility	ASTMINTERNATIONAL	ASTMINTERNATIONAL
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		Safety   Capabilities   Proficienc	DOJ/DHS National U	Align with each bucket lor single alignment image (N green ring inside the buck	CONFINED TEST		
		OBSTRUCTED TEST LANE	OPEN TEST LANE	continuous green ring or 1 p ring. Similar scoring for accur			0) //
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$\begin{array}{c} 4A_A \\ \hline 3 \\ \hline 5 \\ 1 \\ \hline \end{array} \begin{array}{c} T \\ BL \\ BR \\ \hline T \\ BR \\ T \\ TL \\ R \\ S \\ S$	44 <sub>A</sub> 5		442A 5 4	T BL B TR L	4A <sub>20</sub>	T BL B TR L	$\begin{array}{c c} 4A_{A} & T & BL & B & TR & L \\ \hline 3 & 5 & 1 & BR & TL & R \end{array}$
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$ \begin{array}{c} \mathbf{3^{1A}} 5^{5} \mathbf{1^{1}} & \text{TR B TR L BR} \\ \mathbf{3A^{P1}} & 5^{1} \mathbf{BR^{BL} T^{R} TL R^{L} BL} \\ \end{array} $	$\begin{array}{c c} & 3^{1A} & 5^{5} \\ B^{L} & 3A^{P1} & 5 \end{array}$		$\begin{array}{c c c c c c c c c c c c c c c c c c c $	TR B TR L BR	$3^{1A}$ $5^{5}$ $1^{1}$ $3^{3}$ $3A^{P1}$ $5^{1}$	TR B TR L BR	$3^{\mathbf{1A}}$ $5^{5}$ $1^{1}$ TR B TR L BR $\mathbf{3A}^{\mathbf{P1}}$ $5^{1}$ $\mathbf{BR}^{\mathbf{BL}}$ TR TL R BL
$4^{P2} 5^5 1^{1} \xrightarrow{\text{BR} \text{T} \text{TL } \text{R} \text{BL}}$	4 <sup>P2</sup> 5 <sup>5</sup>				$4^{P2} 5^{5} 1^{1}$		
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*lfivour training aircraft cam	era has a limi	ted range of motion, a	alion with as m	anv buckets as po	ossible. Pilot pro	oficiency is only con	npared using similar systems.