

**Scenario 1 (Monday): Convoying**

<b>Performance Measures</b>	<b>Tele-operated</b>	<b>Supervised autonomy</b>	<b>Unsupervised autonomy</b>
Vehicles left start position	100	200	300
Intermediate waypoints reached	100 per waypoint	200 per waypoint	300 per waypoint
Detection of OPI (i.e. position entry in the map)	100 per OPI	200 per OPI	300 per OPI
Image of OPI produced	50 per OPI	100 per OPI	150 per OPI
Image of OPI transmitted online to control station	100 per OPI	100 per OPI	100 per OPI
% x of correct OPIs with respect to overall number of OPIs reported	0.5*x	1*x	2*x
Vehicle trajectory drawn in map	100	100	100
Live position and video transmitted to start point	100	100	100
Penalty for n manual interventions	-100*n	-50*n	-25*n
Penalty for manual intervention duration t (i.e. $t = IAT + TIAT$ )	$-2000 * \frac{TIAT}{runtime}$	-1000*t/runtime	-500*t/runtime

## Scenario 2 (Tuesday): Reconnoitring of Structures

Performance Measures	Tele-operated	Supervised autonomy	Unsupervised autonomy
Vehicle left start position	100	200	300
3D map of area produced	See table below max. 1000	(See table below)*2 max. 2000	(See table below)*3 max. 3000
Detection of OPI (i.e. position marked in the map)	100 per OPI	200 per OPI	300 per OPI
Image of OPI produced	50 per OPI	100 per OPI	150 per OPI
Image of OPI transmitted online to control station	100 per OPI	100 per OPI	100 per OPI
% x of correct OPIs with respect to overall number of OPIs reported	0.5*x	1*x	2*x
Vehicle trajectory drawn in map	100	100	100
Live video, position and 'RN measurements' transmitted to control station	100	100	100
Detection of 'RN source' (i.e. position marked in the map)	250 each	500 each	750 each
'RN' map of area produced	See table below max. 500	(See table below)*2 max. 1000	(See table below)*3 max. 1500
Mission completed in time	See table below max. 1000	(See table below)*2 max. 2000	(See table below)*3 max. 3000
Penalty for n manual interventions	-100*n	-50*n	-25*n
Penalty for manual intervention duration t (i.e. $t = IAT + TIAT$ )	$-2000 * \frac{TIAT}{runtime}$	-1000*t/runtime	-500*t/runtime

Percentage of area mapped	Score 3D map	Score 'RN' map
<10%	0	0
Between 10% and 25%	250	125
Between 25% and 50%	500	250
Between 50% and 75%	750	375
>75%	1000	500

Mission completion before...	Score
...half of trial time	1000
...¾ of trial time	750
...end of trial time	500

**Scenario 3 (Wednesday): Mule**

<b>Performance Measures</b>	<b>Tele-operated</b>	<b>Supervised autonomy</b>	<b>Unsupervised autonomy</b>
Vehicle left start position P1	100	200	300
Turning point P2 (i.e. end of teach-in) reached	100	200	300
Turning points (P1/P2) reached (during shuttling)	150 per target point	300 per target point	400 per target point
Detection of OPI (i.e. position entry in the map)	100 per OPI	200 per OPI	300 per OPI
Image of OPI produced	50 per OPI	100 per OPI	150 per OPI
Image of OPI transmitted online to control station	100 per OPI	100 per OPI	100 per OPI
% x of correct OPIs with respect to overall number of OPIs reported	0.5*x	1*x	2*x
Live position and video transmitted to start point	100	100	100
Penalty for n manual interventions	-100*n	-50*n	-25*n
Penalty for manual intervention duration t (i.e. $t = IAT + TIAT$ )	$-2000 * \frac{TIAT}{runtime}$	-1000*t/runtime	-500*t/runtime
<i>Penalty: Human-guided teach-in not used</i>	-300	-600	-900

**Scenario 4 (Thursday): Search & Rescue / MedEvac**

<b>Performance Measures</b>	<b>Tele-operated</b>	<b>Supervised autonomy</b>	<b>Unsupervised autonomy</b>
Vehicle left start position	100	200	300
Vehicle found imitated body	200 each	400 each	600 each
Picture of imitated body acquired	100 each	200 each	300 each
GPS position of imitated body acquired	100 each	200 each	300 each
Imitated body moved (score per imitated body)	See table below max. 1000 each	(See table below)*2 max. 2000 each	(See table below)*3 max. 3000 each
Live position and video transmitted to start point	100	100	100
Mission completed in time	See table below max. 1000	(See table below)*2 max. 2000	(See table below)*3 max. 3000
Penalty for n manual interventions	-100*n	-50*n	-25*n
Penalty for manual intervention duration t (i.e. $t = IAT + TIAT$ )	$-2000 * \frac{TIAT}{runtime}$	-1000*t/runtime	-500*t/runtime

<b>Imitated body moved...</b>	<b>Score</b>
...away from finding location	500-(weight reduction penalty)
...more than ½ of total distance	750-(weight reduction penalty)
...close to target location (<10m)	1000-(weight reduction penalty)
<b>Selected imitated body weight</b>	<b>Weight reduction penalty</b>
100kg	0
70kg	100
40kg	200
10kg	300

<b>Mission completion before...</b>	<b>Score</b>
...half of trial time	1000
...¾ of trial time	750
...end of trial time	500