

ANNEX

A.1 FIELD TRIAL: BRIEFING OF OBSERVERS

My name is

There is a need for an investigation of the camouflage capabilities of different camouflage nets. The result of this investigation will be used for decisions on the future purchase of camouflage nets. Both from a military and an economical point of view the correct decision will be of great importance to.....

It is important that the investigation results in an objective and accurate evaluation of the camouflage effectiveness of the camouflage nets. To achieve this it is necessary to run a field trial to collect the information needed and you are participating in this trial. It is of the utmost importance that you make your own personal observations, independent of all other observers. You will observe a background against which a number of target vehicles, camouflaged and uncamouflaged, have been placed within an area that has been clearly marked with signs. You will move along an observation path leading towards the background. The observation path is marked with markers. Each marker defines an observation post from which an observation is to be made. The background is divided into five sections with signs, which are clearly visible. Within each section there may or may not be placed a target. Before you start, you will receive an observation form on which you mark your detections with a cross. The form is divided into five columns corresponding to the background sections. Each of these columns is subdivided into 3 sub columns. The observation points are printed on the form by their ranges from the background.

When you detect a target, you must mark the detection on the form. You do this by putting a cross in the sub column corresponding to the observation post at which you are standing. You estimate in which third of a given background section you have detected the target and put your cross in the corresponding sub column of the form. Further, at each observation post you are to mark with a cross whether the sun was shining or not during the observation. When you have finished your observations at an observation post, you will move to the next observation post, where you repeat the procedure. There is no time limit for your observations at each observation post, but you are not allowed to gather during the observations and you are not allowed to communicate in any way with the other observers. Your observation form will be collected and checked at the end of the observation path. In case of doubt as to your filling in of the form, you may be asked for clarification. I want to stress that we are only interested in your personal observations. This is very important for the results of the trial. That is the reason why you are not allowed to talk with other observers during the observations or to discuss the trial with other observers before the whole trial is completed. Finally, this is not a test of your personal capabilities as an observer and your name will not be recorded with the processing of the data.

Do you have any questions?

ANNEX

A.2 FORM FOR FIELD OBSERVATIONS

DATE OBSERVER

SUBTRIAL

BACKGROUND

		BACKGROUND SECTION										ILLUMINANCE						
		1			2			3			4			5			Sun	Over cast
OBSERVATION DISTANCE	2000																	
	1800																	
	1600																	
	1400																	
	1200																	
	1100																	
	1000																	
	900																	
	800																	
	700																	
	600																	
	500																	
	400																	
300																		
200																		

A.3 PHOTOSIMULATION TRIAL BRIEFING TO OBSERVERS

Part 1 (For all observers)

Welcome and thank you for participating in this visual camouflage trial.

Introduce ourselves.

The ultimate purpose of this work is to improve the effectiveness of Canada's and NATO's land forces through the improvement and validation of camouflage. Our results are shared with similar results from our NATO allies, allowing all to benefit.

Each of you will be asked to act as an observer looking for tactical military vehicles such as trucks, tanks or armored personnel carriers. As in real life, the vehicles may or may not be camouflaged. You will individually view 2 different sets of slides. The first set of slides has 16 images and you must scan the entire image, looking for the target or targets. The second set has 20 images and the target or targets are located between two sets of large white markers that you will see in the centre of the image. In each case there will be a series of photographic slides, which start at long range and gradually decrease down to short range.

The basic idea is to determine the range at which you detect the target vehicles. We do this by noting the slide on which you first detect the targets. Remember that we show the slides starting from a very long range and then proceed to shorter and shorter ranges. We allow ample time to view each slide – 14 seconds.

We will give you a pointer to use while viewing the slides. If at any time you detect a target, point it out with the pointer, describe the target and if you can, tell us what it is. **Please do not guess.** If you see the same target on other slides, mention it again and give any added details that you can.

To confirm: a series of slides will be presented, starting from long range and steadily decreasing. Study each slide and describe any military tactical vehicles you detect. If you wish to change your mind about either the detection or description of an earlier target, please do so. This is not a problem and in fact helps us to determine the camouflage effectiveness. We want to know when you detect a target and when you recognize the type or class of vehicle, such as tracked vehicle, truck, etc.

This camouflage trial is not a test of your personal ability. It is a test of the camouflage materials. Your name will not be recorded in any way.

If you have any questions, you may ask them now or when you come in for your turn.

Part 2 (In the viewing room)

You will be shown two sets of slides. The first set of slides has 16 images and you must scan the entire image, looking for the target or targets. The second set has 20 images and the target or targets are located between two sets of large white markers that you will see in the centre of the image. If at any time you detect a target, point it out with the laser pointer, describe the target as best you can and if you can, tell us what it is. Furthermore, if you see the same target on other slides, mention it again and give any added details that you can.

After the warm-up set has been shown:

For this set of slides, we ask that you focus on the white panels. If at any time you detect a target in the area between the white panels, point it out with the pointer, describe the target and if you can, tell us what it is.

A.4 DEMOGRAPHIC QUESTIONNAIRE

Thank you for participating in this NATO camouflage effectiveness experiment. We request that you take a few minutes to provide us with answers to some questions that will help us to properly analyze camouflage effectiveness. The long-term goal is to provide sound advice to Canadian and NATO forces on the effectiveness of tactical camouflage.

CONFIDENTIALITY

No participant will be named in any part of this experiment and no personal information other than that relating to camouflage effectiveness will be collected. Any information gathered will be used exclusively for the stated purpose and will not be disseminated further for any reason.

1. What is your Military Occupation Code? _____

2. What is your age? _____

3. What is your sex? _____

4. Do you have normal 20 / 20 vision or better in both eyes?

Good vision in both eyes

Good vision in both eyes with glasses or contacts

No If no, please explain. _____

5. Are you color blind?

No

Yes

Don't know

6. Have you had any training or experience in locating and identifying military vehicles in the field?

No

Yes If yes, please explain. _____

7. Have you ever participated in this sort of evaluation before?

No

Yes If yes, please explain. _____

A.5 FORM FOR PHOTOSIMULATION EXPERIMENTS

Obsvr # 5

**OBSERVATION FORM
IMCAVS CALIBRATION SLIDES**

Date: 21 Jan 03

Series: 20 Aug 98 Run 1, Coyote BARE

Range	Target	False	Comments
2500	X		
2250	X		
2000	X	F	Bushes at bottom of slide
1800	X	F	Brown patch in tree line
1600	X		
1400	X		
1200	X		
1100	X	F	Something at bottom left of slide
1000	X		
900	D		Vehicle
800	R		Wheeled vehicle
700	“		8 wheels
600	“		
500	I		Coyote
400	“		
300	“		
TGT	“		

A.6 DIGITAL SIMULATION TRIAL BRIEFING TO OBSERVERS

Welcome and thank you for participating in this visual camouflage trial.

The ultimate purpose of this work is to improve the effectiveness of Canada's and NATO's land forces through the improvement and validation of camouflage. Our results are shared with similar results from our NATO allies, allowing all to benefit.

You are asked to act as an observer looking for tactical military vehicles such as trucks, tanks or armored personnel carriers. As in real life, the vehicles may or may not be camouflaged. You will view a set of 18 images on a laptop computer. The images start at a very long range and gradually decrease down to short range.

The basic idea is to determine the range at which you detect the target or targets. I do this by noting the image on which you first detect the target or targets. Remember that you are shown the images starting from a very long range, proceeding to shorter and shorter ranges. You are allowed ample time to view each image – 14 seconds.

You will have a pointer to use while viewing the images. If at any time you detect a target, point it out with the pointer and if you can, tell me what it is. If you see the same target on subsequent images, point it out again and give any added details that you can.

To confirm: a series of images will be presented, starting from long range and steadily decreasing. Study each image and point out and describe any military tactical vehicles you detect. If you wish to change your mind about either the detection or description of an earlier target please do so. This is not a problem and in fact helps us to determine the camouflage effectiveness. I want to know when you detect a target and when you recognize the type or class of vehicle, such as tracked vehicle, truck, etc.

This camouflage trial is not a test of your personal ability. It is a test of the camouflage materials. Your name will not be recorded on the result sheet.

Thank you again for your co-operation. For familiarization purposes, you will now see an image similar to those that you will be seeing later and you can take some time to adjust the laptop screen viewing angle and your chair to best suit yourself. If you have any questions, please feel free to ask.

A.7 EXAMPLE OF A DATA SHEET

SCI-095 Camouflage Assessment Trial 2004
LAPTOP ONLY

Nation:	
Prepared by:	

Observer	Age (Yrs)	Sex (M/F)	Color Blind (Y/N/Unk)	Target Detection Experience (Y/N)	CAT Imagery					
					Calibration Imagery		Bare Target		Camouflage Net	
					Slide No. when Detction Occurred	Detection Range (m)	Slide No. when Detction Occurred	Detection Range (m)	Slide No. when Detction Occurred	Detection Range (m)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

LAPTOP

1. 14 inch (35 cm) diagonal display
2. 1020 x 768 resolution
3. 16 bit colour
4. 60 Hz

INSTRUCTIONS

1. Use MS Power Point and at least 15 observers
2. Use 14 second interval and briefing provided
3. Show IMCAVS calibration imagery first
4. Use SUNNY series of images after calibration series
5. Use digitalsimulation guidelines in SCI-095 draft report

Please record any suggestions for the improvement of procedures

A.8 VALUES FOR $\alpha(N)$ FOR FIRST PERCENTILE CALCULATION

This Annex gives the expected value of the first order statistic of a standardized Normal distribution, denoted by $\alpha(N)$, for use in the calculation of the first percentile of a set of camouflage data. The value depends only on N, the total number of observations in the dataset being evaluated.

N	$\alpha(N)$	N	$\alpha(N)$	N	$\alpha(N)$	N	$\alpha(N)$
1	–	26	-1.982	51	-2.256	76	-2.406
2	-0.564	27	-1.998	52	-2.263	77	-2.411
3	-0.846	28	-2.013	53	-2.271	78	-2.416
4	-1.029	29	-2.028	54	-2.278	79	-2.421
5	-1.163	30	-2.042	55	-2.285	80	-2.425
6	-1.267	31	-2.056	56	-2.292	81	-2.43
7	-1.352	32	-2.069	57	-2.299	82	-2.434
8	-1.424	33	-2.082	58	-2.305	83	-2.439
9	-1.485	34	-2.094	59	-2.312	84	-2.443
10	-1.539	35	-2.106	60	-2.318	85	-2.447
11	-1.586	36	-2.118	61	-2.324	86	-2.451
12	-1.629	37	-2.129	62	-2.331	87	-2.456
13	-1.668	38	-2.14	63	-2.337	88	-2.46
14	-1.703	39	-2.15	64	-2.342	89	-2.464
15	-1.736	40	-2.16	65	-2.348	90	-2.468
16	-1.766	41	-2.17	66	-2.354	91	-2.472
17	-1.794	42	-2.18	67	-2.36	92	-2.476
18	-1.82	43	-2.189	68	-2.365	93	-2.48
19	-1.844	44	-2.198	69	-2.371	94	-2.483
20	-1.867	45	-2.207	70	-2.376	95	-2.487
21	-1.889	46	-2.216	71	-2.381	96	-2.491
22	-1.909	47	-2.224	72	-2.386	97	-2.495
23	-1.929	48	-2.232	73	-2.392	98	-2.498
24	-1.947	49	-2.24	74	-2.397	99	-2.502
25	-1.965	50	-2.248	75	-2.401	100	-2.505

A.9 EXAMPLES OF SPREADSHEETS FOR STATISTICAL ANALYSIS

Wilcoxon Example.xls

Det Range for Camouflage Type

Det Range by Camouflage Type	
A	B
-1733	-1700
-1667	-1150
-1167	-1075
-1133	-1050
-1075	-1025
-1050	-983
-1025	-967
-980	-950
-960	-933
-940	-917
-920	-850
-875	-750
-850	-650
-825	-567
-750	-533

analysed with: Analyse-it + General 1.71

Test	Mann-Whitney test	
Alternative hypothesis	Det Range for Camouflage Type Det Range by Camouflage Type: A ≠ B	
Performed by	ChristopherG	Date 20 May 2004

n | 30

Det Range by Camouflage Type	n	Rank sum	Mean rank	U
A	15	207.5	13.83	137.5
B	15	257.5	17.17	87.5

Difference between medians | -75.0
95.5% CI | -283.0 to 67.0 (exact)

Mann-Whitney U statistic | 137.5
2-tailed p | 0.3245 (exact tables used, 33% ties)

Wilcoxon Paired Example.xls

Det Range for Camouflage Type

Det Range by Camouflage Type		
Observer	Cam A	Cam B
1/16	-1050	-950
2/17	-1150	-950
3/18	-1700	-1150
4/19	-950	-850
5/20	-950	-950
6/21	-950	-1050
7/22	-850	-1700
8/23	-1050	-750
9/24	-1050	-650
10/25	-1700	-550
11/26	-1150	-1050
12/27	-750	-950
13/28	-850	-950
14/29	-950	-550
15/30	-850	-1050

Test **Wilcoxon signed ranks test** analysed with: Analyse-it + General 1.71
 Alternative hypothesis Det Range for Camouflage Type
 Det Range by Camouflage Type: Cam A ≠ Cam B
 Performed by ChristopherG Date 20 May 2004

n | 15

Difference between pairs	n	Rank sum	Mean rank
Positive	5	33.0	6.60
Negative	9	72.0	8.00
Zero	1		

Difference between medians -100.000
 95.2% CI -325.000 to 100.000 (exact)

Wilcoxon's W statistic 33
 2-tailed p 0.2412 (exact tables used, 71% ties)

Kruskal-Wallis Example.xls

Detection Range for Camouflage Type

Det Range by Camouflage Type		
A	B	C
-1733	-1700	-1900
-1667	-1150	-1267
-1167	-1075	-1233
-1133	-1050	-1067
-1075	-1025	-1033
-1050	-983	-980
-1025	-967	-960
-980	-950	-940
-960	-933	-920
-940	-917	-880
-920	-850	-860
-875	-750	-840
-850	-650	-820
-825	-567	-767
-750	-533	-733

analysed with: Analyse-it + General 1.71

Test	Kruskal-Wallis ANOVA	
Comparison	Detection Range for Camouflage Type Det Range by Camouflage Type: A, B, C	
Performed by	ChristopherG	Date 21 May 2004

n | 45

Det Range by Camouflage Type	n	Rank sum	Mean rank
A	15	302.5	20.17
B	15	378.5	25.23
C	15	354.0	23.60

Kruskal-Wallis statistic | 1.16
 p | 0.5588 (chisqr approximation, corrected for ties)

Friedman Example.xls

Det Range for Camouflage Type

Observer	Det Range by Camouflage Type		
	Cam A	Cam B	Cam C
1/16/31	-1050	-950	-1050
2/17/32	-1150	-950	-750
3/18/33	-1700	-1150	-950
4/19/34	-950	-850	-1050
5/20/35	-950	-950	-1300
6/21/36	-950	-1050	-950
7/22/37	-850	-1700	-950
8/23/38	-1050	-750	-850
9/24/39	-1050	-650	-1300
10/25/40	-1700	-550	-1900
11/26/41	-1150	-1050	-850
12/27/42	-750	-950	-850
13/28/43	-850	-950	-950
14/29/44	-950	-550	-750
15/30/45	-850	-1050	-850

Test	Friedman ANOVA	analysed with: Analyse-it + General 1.71	
Comparison	Det Range for Camouflage Type		
	Det Range by Camouflage Type: Cam A, Cam B, Cam C		
Performed by	ChristopherG	Date	27 May 2004

n | 15

Det Range by Camouflage Type	n	Rank sum	Mean rank
Cam A	15	29.0	1.93
Cam B	15	32.0	2.13
Cam C	15	29.0	1.93

Friedman's statistic | 0.4364
 p | 0.8040 (chisqr approximation, corrected for ties)

Age Experience Tests.xls

analysed with: Analyse-it + General 1.71

Test	Mann-Whitney test	
Alternative hypothesis	Detection Range for Observer Age and Experience Det Rng by Experience: No ≠ Yes	
Performed by	ChristopherG	Date 31 May 2004

n | 15

Det Rng by Experience	n	Rank sum	Mean rank	U
No	9	93.5	10.39	5.5
Yes	6	26.5	4.42	48.5

Difference between medians | 550.0
 95.0% CI | 300.0 to 800.0 (exact)

Mann-Whitney U statistic | 5.5
 2-tailed p | 0.0120 (exact tables used, 40% ties)

