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<b>Title - Sujet</b> MOUNTAIN BIKING - WHITEHORSE	
<b>Solicitation No. - N° de l'invitation</b> W4295-16C003/A	<b>Amendment No. - N° modif.</b> 002
<b>Client Reference No. - N° de référence du client</b> W4295-16C003	<b>Date</b> 2016-03-22
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$VIC-249-6936	
<b>File No. - N° de dossier</b> VIC-5-38236 (249)	<b>CCC No./N° CCC - FMS No./N° VME</b>
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Buyer ID - Id de l'acheteur  
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**Amendment 002 issued to post the following supporting documentation (Ref. section 10 of the Statement of Work at Annex A):**

- d) A-CR-CCP-951/PT-002 - Adventure Training Safety Standards
- e) A-CR-CCP-715/PG-001 - Performance and Enabling Objectives – Bike Activities

**All other terms and conditions of the bid solicitation remain the same.**



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A-CR-CCP-951/PT-002



**ROYAL CANADIAN ARMY CADETS**

# **ADVENTURE TRAINING SAFETY STANDARDS**

(ENGLISH)

Cette publication est disponible en français sous le numéro A-CR-CCP-951/PT-003.

**Issued on Authority of the Chief of the Defence Staff**

**Canada**





National Défense  
Defence nationale

**A-CR-CCP-951/PT-002**

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# **ADVENTURE TRAINING SAFETY STANDARDS**

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Original .....	0 .....	2005-11-17	Ch .....	3 .....
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Zero in Change No. column indicates an original page. Total number of pages in this publication is 298 consisting of the following:

<b>Page No.</b>	<b>Change No.</b>	<b>Page No.</b>	<b>Change No.</b>
Title .....	2	4-9/4-10 .....	0
A to B/C .....	2	4A-1 to 4A-3/4A-4 .....	0
i/ii to xii .....	2	4B-1 to 4B-3/4B-4 .....	0
1-1 to 1-3/1-4 .....	2	4C-1/4C-2 .....	0
1A-1 to 1A-2 .....	0	5-1 to 5-10 .....	2
1B-1 to 1B-2 .....	0	5-11 to 5-13 .....	0
1C-1/1C-2 .....	0	5-14 to 5-25/5-26 .....	2
2-1 to 2-4 .....	2	5A-1 to 5A-4 .....	0
2-5 to 2-6 .....	0	5A-5 .....	2
2A-1/2A-2 .....	0	5A-6 .....	1
3-1 .....	2	5A-7 to 5A-9/5A-10 .....	2
3-2 .....	0	5B-1 to 5B-2 .....	2
3-3 to 3-5 .....	2	5C-1 to 5C-2 .....	2
3-6 to 3-7 .....	1	5C-3/5C-4 .....	0
3-8 to 3-9 .....	0	5D-1/5D-2 .....	2
3-10 .....	2	5E-1/5E-2 .....	0
3-11 .....	0	5F-1/5F-2 .....	0
3-12 to 3-15 .....	2	6-1 to 6-3 .....	0
3-16 .....	1	6-4 .....	2
3-17 .....	2	6-5 .....	0
3-18 .....	0	6-6 .....	2
3A-1 to 3A-2 .....	0	6-7 to 6-12 .....	0
3B-1 .....	0	6A-1 to 6A-2 .....	0
3B-2 .....	1	6B-1/6B-2 .....	2
3B-3 to 3B-9/3B-10 .....	0	7-1 to 7-4 .....	2
3C-1/3C-2 .....	0	7-5 to 7-9 .....	0
3D-1 .....	0	7-10 .....	2
3D-2 .....	2	7-11/7-12 .....	0
4-1 .....	0	7A-1 to 7A-3/7A-4 .....	0
4-2 .....	2	7B-1/7B-2 .....	0
4-3 .....	1	7C-1/7C-2 .....	0
4-4 to 4-6 .....	2	8-1 to 8-4 .....	2
4-7 .....	0	8-5 to 8-6 .....	0
4-8 .....	2	8-7 .....	2

## LIST OF EFFECTIVE PAGES (Cont)

Page No.	Change No.	Page No.	Change No.
8-8.....	0	11-12.....	2
8A-1.....	0	11-13 to 11-14.....	0
■ 8A-2.....	2	11A-1 to 11A-3.....	0
8B-1 to 8B-2.....	0	11A-4.....	1
9-1.....	0	11A-5 to 11A-7/11A-8.....	0
■ 9-2 to 9-3.....	2	11B-1 to 11B-2.....	2
9-4.....	0	11C-1/11C-2.....	2
■ 9-5 to 9-6.....	2	11D-1/11D-2.....	0
9-7 to 9-8.....	0	11E-1 to 11E-3/11E-4.....	0
9A-1 to 9A-2.....	0	11F-1/11F-2.....	0
9B-1/9B-2.....	0	11G-1/11G-2.....	0
10-1 to 10-7.....	0	11H-1/11H-2.....	0
■ 10-8 to 10-9/10-10.....	2	12-1.....	0
10A-1 to 10A-2.....	0	12-2 to 12-4.....	2
10B-1 to 10B-2.....	0	12-5/12-6.....	0
10C-1/10C-2.....	0	12A-1 to 12A-4.....	0
10D-1/10D-2.....	0	12B-1 to 12B-10.....	0
10E-1/10E-2.....	0	12C-1 to 12C-7/12C-8.....	0
10F-1 to 10F-2.....	0	12D-1/12D-2.....	2
10G-1/10G-2.....	0	GL-1.....	2
■ 11-1.....	2	GL-2 to GL-5.....	0
11-2 to 11-3.....	0	GL-6.....	2
■ 11-4 to 11-5.....	2	GL-7/GL-8.....	0
11-6 to 11-11.....	0		

Contact Officer: D Cdts 3-2-5 – Staff Officer Army Cadet Program Development

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## FOREWORD

1. A-CR-CCP-951/PT-002, Royal Canadian Army Cadets – Adventure Training Safety Standards, is issued on the authority of the Chief of the Defence Staff and it is to be first implemented during the year of 2003.
2. This publication was developed by Director of Program Development (D Cdts 3) in accordance with Canadian Forces regulations and related civilian agencies.
3. This publication is the authority for the conduct, supervision, support and qualification requirements of related Royal Canadian Army Cadets (RCAC) adventure training activity.
4. All other activities wanting to be practiced and not appearing in this publication will have to obtain the Detachment/Region or the Directorate of Cadets authorization.
5. Suggestions for changes will be forwarded to National Defence Headquarters (NDHQ), Attention: D Cdts 3-2-5 – Staff Officer Army Cadet Program Development or by Email to [arm.dev@cadets.gc.ca](mailto:arm.dev@cadets.gc.ca). ■



## TABLE OF CONTENTS

	<b>PAGE</b>
<b>CHAPTER 1 – INTRODUCTION .....</b>	<b>1-1</b>
Description .....	1-1
Aim .....	1-1
Using This Publication.....	1-1
Authorization .....	1-1
Safety .....	1-1
Post-activity.....	1-3/1-4
<b>Annex A – Medical Information .....</b>	<b>1A-1</b>
<b>Annex B – Consent to Adventure Training.....</b>	<b>1B-1</b>
<b>Annex C – Joining Instructions .....</b>	<b>1C-1/1C-2</b>
<b>CHAPTER 2 – PHILOSOPHY AND APPLICATION CONCEPTS – EXPERIENTIAL EDUCATION.....</b>	<b>2-1</b>
General.....	2-1
Definitions.....	2-1
Concepts .....	2-1
Methods.....	2-3
Debriefing Method .....	2-4
Personal Reflection .....	2-5
<b>Annex A – References .....</b>	<b>2A-1/2A-2</b>
<b>CHAPTER 3 – CANOEING – KAYAKING – VOYAGEUR CANOEING – SEA KAYAKING.....</b>	<b>3-1</b>
General.....	3-1
Description of Activity .....	3-1
Aim of Activity.....	3-1
Canadian Regulations Concerning Specific Activities .....	3-1
Military Regulations .....	3-1
CCM Safety Regulations.....	3-2
Authority Level .....	3-2
Governing Bodies.....	3-2
Equipment Requirements.....	3-3
Recommended Equipment List.....	3-4
Safety Boat Requirements .....	3-4
Ration Requirements .....	3-4
Transportation Requirements.....	3-5
Cadet Skill Level .....	3-5
Physical Fitness .....	3-6
Progression Matrix .....	3-6
Instructor to Cadet Ratios .....	3-6
Max and Min Number of Participants.....	3-7
Management Guidelines .....	3-7
Required Preparatory Work .....	3-8
Necessary Planning .....	3-9
Intensity Level of the Activity.....	3-10
Environmental Considerations .....	3-10
Weather Considerations.....	3-10
Limitations .....	3-11
Risk Assessment and Management .....	3-11
Debrief.....	3-12
Logbook.....	3-12

## TABLE OF CONTENTS (Cont)

	<b>PAGE</b>
SPECIFIC CANOEING SAFETY STANDARDS .....	3-12
CCM Regulations .....	3-12
■ Equipment Requirements.....	3-12
Instructor Qualifications and Experience .....	3-12
SPECIFIC KAYAKING SAFETY STANDARDS.....	3-14
CCM Regulations .....	3-14
■ Equipment Requirements.....	3-14
Instructor Qualifications and Experience .....	3-14
SPECIFIC VOYAGEUR CANOEING SAFETY STANDARDS .....	3-15
CCM Regulations .....	3-15
■ Equipment Requirements.....	3-15
Safety Boat Requirements .....	3-16
Transportation Requirements.....	3-16
Max and Min Number of Participants .....	3-16
Instructor Qualifications and Experience .....	3-16
SPECIFIC SEA KAYAKING SAFETY STANDARDS.....	3-17
CCM Regulations .....	3-17
■ Equipment Requirements.....	3-17
Safety Boat Requirements .....	3-17
Instructor Qualifications and Experience .....	3-17
<b>Annex A – Paddle Canada Provincial/Territorial Members.....</b>	<b>3A-1</b>
<b>Annex B – Paddling Progression Matrix.....</b>	<b>3B-1</b>
<b>Annex C – References .....</b>	<b>3C-1/3C-2</b>
<b>Annex D – International Scale of River Difficulty.....</b>	<b>3D-1</b>
<b>CHAPTER 4 – CAVING .....</b>	<b>4-1</b>
Description of Activity.....	4-1
Aim of Activity.....	4-1
Canadian Regulations Concerning Specific Activities .....	4-2
Military Regulations .....	4-2
CCM Safety Regulations.....	4-2
Authority Level .....	4-2
Governing Bodies.....	4-2
■ Equipment Requirements.....	4-2
Recommended Equipment.....	4-3
■ Ration Requirements .....	4-4
Transportation Requirements.....	4-4
Cadet Skill Level .....	4-4
Physical Fitness .....	4-5
Progression Matrix .....	4-5
Qualifications, Experience and Fitness of Leaders and OPI .....	4-5
Leader Qualifications and Experience .....	4-6
Instructor to Cadet Ratios .....	4-6
Max and Min Number of Participants.....	4-6

## TABLE OF CONTENTS (Cont)

	<b>PAGE</b>
Management Guidelines .....	4-6
Necessary Planning/Required Preparatory Work .....	4-7
Time of Day/Year Regulations and Weather Considerations .....	4-8
Duration of the Activity .....	4-8
Environmental Considerations .....	4-8
Limitations .....	4-8
Risk Management .....	4-8
Debrief .....	4-9/4-10
Logbook .....	4-9/4-10
<b>Annex A – British Columbia Speleological Society – Code of Conduct for Caving Activities .....</b>	<b>4A-1</b>
<b>Annex B – Caving Progression Matrix .....</b>	<b>4B-1</b>
<b>Annex C – References .....</b>	<b>4C-1/4C-2</b>
<b>CHAPTER 5 – CLIMBING AND MOUNTAINEERING .....</b>	<b>5-1</b>
General .....	5-1
Description of Activity .....	5-1
Aim of Activity .....	5-3
Canadian Regulations Concerning Specific Activities .....	5-3
Military Regulations .....	5-4
Authority Level .....	5-4
Governing Bodies .....	5-4
Equipment Requirements .....	5-5
Recommended Equipment List .....	5-7
Ration Requirements .....	5-7
Transportation Requirements .....	5-9
Cadet Skill Level .....	5-9
Physical Fitness .....	5-10
Training Progression .....	5-10
Qualifications, Experience and Fitness of Leaders and OPI .....	5-10
Instructor to Cadet Ratios .....	5-11
Max and Min Number of Participants .....	5-11
Management Guidelines .....	5-11
Necessary Planning .....	5-14
Time of Year Regulation .....	5-15
Duration and Intensity Level of the Activity .....	5-16
Environmental Considerations .....	5-16
Weather Considerations .....	5-16
Limitations .....	5-17
Risk Assessment and Management .....	5-18
Debrief .....	5-18
Logbook .....	5-19
<b>SPECIFIC TOP ROPE SAFETY STANDARDS .....</b>	<b>5-19</b>
Equipment Requirements .....	5-19
Instructor Qualification .....	5-20
<b>SPECIFIC BOULDERING SAFETY STANDARDS .....</b>	<b>5-20</b>
Equipment Requirements .....	5-20
Instructor Qualification .....	5-20

## TABLE OF CONTENTS (Cont)

	<b>PAGE</b>
SPECIFIC LEAD AND MULTI-PITCH CLIMBING SAFETY STANDARDS.....	5-21
■ Equipment Requirements.....	5-21
Instructor Qualification .....	5-22
SPECIFIC ICE CLIMBING SAFETY STANDARDS.....	5-22
■ Equipment Requirements.....	5-22
Instructor Qualification .....	5-22
SPECIFIC ABSEIL SAFETY STANDARDS.....	5-22
■ Equipment Requirements.....	5-22
Safety Equipment .....	5-23
■ Anchor Standards .....	5-23
Safety Checklist .....	5-23
Instructor Qualification .....	5-24
 SPECIFIC MOUNTAINEERING SAFETY STANDARDS .....	 5-25/5-26
Instructor Qualification .....	5-25/5-26
<b>Annex A – Progression Matrix .....</b>	<b>5A-1</b>
<b>Annex B – Spotting .....</b>	<b>5B-1</b>
<b>Annex C – River Crossings .....</b>	<b>5C-1</b>
<b>Annex D – Ice Safety .....</b>	<b>5D-1/5D-2</b>
<b>Annex E – Climbing Code .....</b>	<b>5E-1/5E-2</b>
<b>Annex F – References.....</b>	<b>5F-1/5F-2</b>
<b>CHAPTER 6 – CROSS-COUNTRY SKIING .....</b>	<b>6-1</b>
Description of Activity .....	6-1
Aim of Activity .....	6-1
Canadian Regulations Concerning Specific Activities .....	6-1
CCM Safety Regulations.....	6-1
Authority Level .....	6-2
Governing Bodies.....	6-2
■ Equipment Requirements.....	6-4
Recommended Equipment List.....	6-5
■ Ration Requirements .....	6-6
Transportation Requirements.....	6-7
Safety Precautions/General Rules for Cross-country Skiing .....	6-7
Special Safety Considerations for Backcountry Skiing .....	6-7
Cadet Skill Level and Progression .....	6-8
Physical Fitness .....	6-9
Qualifications Programs .....	6-9
Qualifications, Experience and Fitness of Leaders and OPI .....	6-10
Required Preparatory Work .....	6-10
Time of Day/Year Regulations .....	6-11
Duration of the Activity .....	6-11
Environmental Considerations .....	6-11

## TABLE OF CONTENTS (Cont)

	<b>PAGE</b>
Weather Considerations/Absolute Stop Conditions .....	6-11
Risk Assessment and Management .....	6-11
Debrief.....	6-12
Logbook.....	6-12
<b>Annex A – Skiing Progression Matrix .....</b>	<b>6A-1</b>
<b>Annex B – References .....</b>	<b>6B-1/6B-2</b>
<b>CHAPTER 7 – HIKING AND BACKPACKING .....</b>	<b>7-1</b>
Description of Activity .....	7-1
Aim of Activity .....	7-1
Canadian Regulations Concerning Specific Activities .....	7-2
Military Regulations .....	7-2
Authority Level .....	7-2
Equipment Requirements.....	7-2
Ration Requirements .....	7-4
Transportation Requirements.....	7-4
Cadet Skill Level .....	7-5
Physical Fitness .....	7-5
Training Progression .....	7-5
Qualifications, Experience and Fitness of Leaders and OPI .....	7-6
Instructor to Cadet Ratios .....	7-6
Max and Min Number of Participants.....	7-6
Management Guidelines .....	7-6
Necessary Planning .....	7-8
Time of Year Regulations.....	7-9
Duration and Intensity Level of the Activity .....	7-9
Environmental Considerations .....	7-9
Weather Considerations.....	7-9
Limitations .....	7-10
Risk Assessment and Management .....	7-11/7-12
Debrief.....	7-11/7-12
Logbook.....	7-11/7-12
<b>Annex A – Hiking and Backpacking Progression Matrix .....</b>	<b>7A-1</b>
<b>Annex B – Climbing Code .....</b>	<b>7B-1/7B-2</b>
<b>Annex C – References .....</b>	<b>7C-1/7C-2</b>
<b>CHAPTER 8 – MOUNTAIN BIKING.....</b>	<b>8-1</b>
Description of Activity .....	8-1
Aim of Activity .....	8-2A/8-2B
Canadian Regulations Concerning Specific Activities .....	8-2A/8-2B
Military Regulations .....	8-2A/8-2B
CCO Safety Regulations .....	8-2A/8-2B
Authority Level .....	8-2A/8-2B
Governing Bodies.....	8-2A/8-2B
Equipment Requirements.....	8-3
Recommended Equipment List.....	8-3

## TABLE OF CONTENTS (Cont)

	PAGE
■ Ration Requirements .....	8-4
Transportation Requirements.....	8-4
Cadet Skill Level .....	8-4
Physical Fitness .....	8-5
Qualifications, Experience and Fitness of Leaders and OPI .....	8-5
Required Preparatory Work .....	8-5
Instructor to Cadet Ratios .....	8-6
Max and Min Number of Participants.....	8-6
Management Guidelines .....	8-6
Training Guidelines .....	8-7
Time of Day/Year Regulations .....	8-7
■ Duration and Intensity Level of the Activity .....	8-7
Environmental Considerations .....	8-7
Weather Considerations.....	8-8
Absolute Stop Conditions .....	8-8
Risk Assessment and Management .....	8-8
Debrief.....	8-8
Logbook.....	8-8
<b>Annex A – Mountain Bike Progression Matrix .....</b>	<b>8A-1</b>
<b>Annex B – National and Provincial Cycling Associations .....</b>	<b>8B-1</b>
<b>CHAPTER 9 – ORIENTEERING .....</b>	<b>9-1</b>
Description of Activity .....	9-1
Aim of Activity .....	9-1
Canadian Regulations Concerning Specific Activities .....	9-1
Military Regulations .....	9-1
CCO Safety Regulations .....	9-1
Authority Level .....	9-1
Governing Bodies.....	9-2
■ Equipment Requirements.....	9-2
Recommended Equipment List.....	9-2
■ Ration Requirements .....	9-3
Transportation Requirements.....	9-3
Cadet Skill Level .....	9-3
Physical Fitness .....	9-3
Qualifications, Experience and Fitness of Leaders and OPI .....	9-3
Instructor to Cadet Ratios .....	9-4
Maximum and Minimum Number of Participants .....	9-4
Management Guidelines .....	9-4
Required Preparatory Work .....	9-6
Necessary Planning .....	9-6
Time of Day/Year Regulations .....	9-6
■ Duration of the Activity .....	9-6
Environmental Considerations .....	9-7
Weather Considerations.....	9-7
Limitations .....	9-7
Risk Assessment and Management .....	9-7
Debrief.....	9-8
Logbook.....	9-8



## TABLE OF CONTENTS (Cont)

	PAGE
<b>Annex A – Orienteering Progression Matrix .....</b>	<b>9A-1</b>
<b>Annex B – References .....</b>	<b>9B-1/9B-2</b>
<b>CHAPTER 10 – RAFTING.....</b>	<b>10-1</b>
General.....	10-1
Purpose of the Activity .....	10-1
Canadian Regulations.....	10-1
CCM Regulations.....	10-2
Governing Bodies.....	10-5
Level of Authority .....	10-6
Transportation Requirements.....	10-6
Skills and Development of the Cadet.....	10-6
Qualifications and Role of Personnel.....	10-7
Instructor to Cadet Ratio .....	10-8
Maximum Number of Participants.....	10-8
Environmental Considerations .....	10-8
Weather Considerations.....	10-9/10-10
Duration of the Activity .....	10-9/10-10
Limitations .....	10-9/10-10
Conditions for Halting the Activity .....	10-9/10-10
Logbook.....	10-9/10-10
Debrief.....	10-9/10-10
<b>Annex A – Prerequisites for Participation .....</b>	<b>10A-1</b>
<b>Annex B – Medical Questionnaire .....</b>	<b>10B-1</b>
<b>Annex C – Repair Kit.....</b>	<b>10C-1/10C-2</b>
<b>Annex D – First Aid Kit .....</b>	<b>10D-1/10D-2</b>
<b>Annex E – Provisions Governing an Expedition .....</b>	<b>10E-1/10E-2</b>
<b>Annex F – Rafting Progression Matrix.....</b>	<b>10F-1</b>
<b>Annex G – References .....</b>	<b>10G-1/10G-2</b>
<b>CHAPTER 11 – ROPES AND CHALLENGE COURSE .....</b>	<b>11-1</b>
Description of Activity .....	11-1
Aim of Activity.....	11-3
Canadian Regulations.....	11-3
Military Regulations.....	11-3
CCO Safety Regulations .....	11-3
Governing Bodies.....	11-4
Equipment Requirements.....	11-4
Ration Requirements .....	11-5
Transportation Requirements.....	11-5
Cadet Skill Level .....	11-5
Physical Fitness .....	11-6

## TABLE OF CONTENTS (Cont)

	<b>PAGE</b>
Qualifications, Experience and Fitness of Leaders and OPI .....	11-7
Required Preparatory Work .....	11-9
Instructor to Cadet Ratios .....	11-11
Courses Safety Precautions.....	11-11
Environmental Considerations .....	11-12
Time of Day/Year Regulations .....	11-12
■ Duration of the Activity .....	11-12
Weather Considerations.....	11-13
Absolute Stop Conditions.....	11-13
Risk Assessment and Management .....	11-13
Logbook.....	11-14
Debrief.....	11-14
<b>Annex A – Ropes and Challenge Course Activity .....</b>	<b>11A-1</b>
■ <b>Annex B – Equipment Standards .....</b>	<b>11B-1</b>
■ <b>Annex C – Safety Equipment .....</b>	<b>11C-1/11C-2</b>
<b>Annex D – Safety Checklist.....</b>	<b>11D-1/11D-2</b>
<b>Annex E – Ropes and Challenge Course Progression Matrix.....</b>	<b>11E-1</b>
<b>Annex F – Emergency/Evacuation Plan.....</b>	<b>11F-1/11F-2</b>
<b>Annex G – Inspection of a Ropes Bridge Site (ACCT) .....</b>	<b>11G-1/11G-2</b>
<b>Annex H – References .....</b>	<b>11H-1/11H-2</b>
<b>CHAPTER 12 – INITIATIVE GAMES AND PROBLEM-SOLVING.....</b>	<b>12-1</b>
Description of Activity .....	12-1
Aim of Activity.....	12-1
Canadian Regulations Concerning Specific Activities .....	12-1
Military Regulations .....	12-1
CCM Safety Regulations.....	12-2
Authority Level .....	12-2
Governing Bodies.....	12-2
■ Equipment Requirements.....	12-2
Transportation Requirements.....	12-2
Cadet Skill Level and Progression .....	12-2
Physical Fitness .....	12-3
Qualifications, Experience and Fitness of Leaders and OPI .....	12-3
Required Preparatory Work .....	12-3
Instructor to Cadet Ratios .....	12-3
Max and Min Number of Participants.....	12-3
Management Guidelines .....	12-3
Training Guidelines .....	12-4
Necessary Planning .....	12-4
Time of Day/Year Regulations .....	12-4
■ Duration and Intensity Level of the Activity .....	12-4

**TABLE OF CONTENTS (Cont)**

	<b>PAGE</b>
Environmental Considerations .....	12-4
Weather Considerations.....	12-4
Absolute Stop Conditions.....	12-5/12-6
Risk Assessment and Management .....	12-5/12-6
Debrief.....	12-5/12-6
<b>Annex A – Introduction Level .....</b>	<b>12A-1</b>
<b>Annex B – Active Level.....</b>	<b>12B-1</b>
<b>Annex C – Non-active Level.....</b>	<b>12C-1</b>
<b>Annex D – References .....</b>	<b>12D-1/12D-2</b>
<b>GLOSSARY .....</b>	<b>GL-1</b>

## LIST OF FIGURES

FIGURE	TITLE	PAGE
1A-1	Medical Information Form.....	1A-2
1B-1	Consent to Adventure Training Form .....	1B-2
3B-1	Canoeing Progression Matrix (2 Sheets) .....	3B-2
3B-2	Voyageur Progression Matrix (2 Sheets) .....	3B-4
3B-3	River Kayaking Progression Matrix (2 Sheets).....	3B-6
3B-4	Sea Kayaking Progression Matrix (2 Sheets).....	3B-8
4B-1	Caving Progression Matrix (2 Sheets).....	4B-2
5A-1	Rock Climbing (Top Rope) Progression Matrix (2 Sheets) .....	5A-2
5A-2	Ice Climbing (Top Rope) Progression Matrix (2 Sheets).....	5A-4
5A-3	Abseiling Progression Matrix (2 Sheets) .....	5A-6
5A-4	Mountaineering and Glacier Progression Matrix (2 Sheets) .....	5A-8
6A-1	Skiing Progression Matrix.....	6A-2
7A-1	Hiking and Backpacking Progression Matrix (2 Sheets) .....	7A-2
8-1	IMBA TDRS ( <a href="http://www.imba.com">www.imba.com</a> ) .....	8-2
8A-1	Mountain Bike Progression Matrix.....	8A-2
9A-1	Orienteering Progression Matrix.....	9A-2
10A-1	Prerequisites for Participation Form .....	10A-2
10B-1	Medical Questionnaire .....	10B-2
10F-1	Rafting Progression Matrix .....	10F-2
11A-1	The Spider Web Activity .....	11A-3
11A-2	The Wall Activity .....	11A-3
11A-3	Placement of Bolt Connectors Onto Safety Cables.....	11A-5
11A-4	“Burma Bridge” and “Loop Bridge” .....	11A-6
11A-5	“Postman’s Walk” .....	11A-6
11A-6	“Zip Line” .....	11A-7/11A-8
11E-1	Ropes and Challenge Course Progression Matrix (2 Sheets) .....	11E-2

## CHAPTER 1

### INTRODUCTION

#### DESCRIPTION

1. This document results from the efforts of the various Army Cadet Program Review Boards convened since 1998. The nature and sequence of these activities were developed IAW CATO 40-01, Army Cadet Program Outline, and in compliance with the development and safety standards of the Canadian Forces and national/international agencies, according to their area of specialization.

#### AIM

2. The aim of this publication is to provide comprehensive industry based safety standards to guide and govern the training, resource requirements, progression conduct and structure of adventure training activities conducted by Region Cadet Support Units (RCSUs) and Cadet Corps.

#### USING THIS PUBLICATION

3. The level at which the activities described in this publication are conducted is immaterial; the fact remains that the people in charge are **required** to abide by the safety standards and guidelines governing each of these activities.

4. Although camping activities are not addressed in this document, they form an integral part of all the other activities described. For information on the general skills and knowledge required for camping activities, refer to PO X21 of the Star Level Program. For reasons relating to safety and supervision, it is recommended that participants possess basic knowledge and skills relating to "adventure training" before combining this element with any other activity. Moreover, supervisors at all levels shall stress the importance of practicing minimum impact camping and of leaving no trace of one's passage. Remember that you are a guest in someone else's house! Respect private property, homes and the need for peace and quiet of other site users.

#### AUTHORIZATION

5. As stipulated at CATO 40-01, Army Cadet Program Outline, advance authorization must be obtained from the proper authorities.

#### SAFETY

6. **Instructor-Cadet Ratio.** CATO 13-12, Supervision of Cadets, outlines the minimum supervision ratio for cadets participating in training. However, in the interest of safety, adventure activities will often require a greater ratio of instructors (X) to cadets (Y), expressed throughout this publication as X:Y. These published ratios govern the cadets taking part in the specified activity, e.g. in the case of climbing, the ratio of 1:2 includes only those cadets actually participating in the climb, the supervision ratio in CATO 13-12 shall govern any cadets who may be waiting in a group for their turn to climb. When a person (CF member, civilian, or cadet) has suitable requisite training offered by an internationally, nationally, or provincially recognized civilian service provider and/or suitable experience, the RCSU CO may, following a review by the Region Expedition Officer of the individuals skills and qualifications, appoint the person as an instructor for the purposes of meeting the supervision ratios specified in this publication.

7. **Inherent Risks of Adventure Activities.** The concept of risk is essential in the conduct of adventure activities. First of all, there must be awareness that the failure to conduct a risk assessment constitutes pure and simple irresponsibility. It should also be understood, however, that if there is no risk or danger then the activity can no longer be termed an adventure activity. Consequently, our task is to strike a

balance between risk levels and safety levels for a given activity. As noted earlier, an activity will be deemed dangerous if there is a failure to implement all appropriate procedures to mitigate the risk. We are referring here to sound individual judgement, proper mental and physical preparation, requisite skills and qualifications, planning, and the use of good equipment. Although we cannot guarantee that no accidents will occur, through a proper assessment of the risks involved we can certainly reduce the frequency, impact and seriousness of any injuries or accidents that may occur.

8. We should point out here that the Canadian Forces practice risk assessment and management and in partnership with the Army Cadet League of Canada provide protection insurance covering individuals involved in all **authorized** activities.

9. Our safety standards were developed in harmony with the policies of civilian and military agencies. It is imperative, therefore, that these safety standards be respected and applied; otherwise, the Canadian Forces and the Army Cadet League of Canada will be unable to assume and accept responsibility should an accident/incident occur. Such a case would constitute negligence and the individual alone would be accountable.

9A. **Accident Investigation and Reporting.** In the case of an accident while undertaking adventure training, accident and investigation procedures shall be followed in accordance with A-GG-040-001/AG-001, DND General Safety Program, Volume 1.

10. **Introduction of the Activity and Briefing of Participants.** Operation Orders detail the overall structure, objectives, numbers of participants, personnel, requisite equipment, start and finish and site of the activity, as well as the planning schedule up to submission of the end-of-activity report. Once this is complete and the personnel have been selected, the following elements must be addressed:

- a. information session for participants;
- b. pre-training (where necessary);
- c. personnel;
- d. equipment check;
- e. check and assessment of facilities;
- f. reservation of site(s) (signing of contract or letter of understanding);
- g. review of policies and procedures;
- h. emergency plan;
- i. prerequisites (medical, age, physical fitness, qualifications, experiences, etc.);
- j. medical statement form (Annex A); and
- k. consent and risk awareness form (Annex B).

11. Of course, the parents must be informed as early as possible in the process, particularly if the activity falls outside the cadet corps' established schedule. Once the additional training (where required) and preparations are complete, the activity leader should reiterate the goals of the activity and the details surrounding the prerequisites.

12. On the day of the activity and at the start of each session, the participants should be briefed on the structure of the activity and the relevant safety procedures. On completion of the briefing, we recommend that the following elements be covered before commencing the activity itself:

- a. list the learning objectives;
- b. note the objectives to be achieved;

- c. stimulate interest and discussion by using metaphors applicable either to the activity itself or its objectives;
  - d. teach/outline the necessary skills;
  - e. warm up; and
  - f. stage some activities to encourage teamwork.
13. Once the activity is complete, the activity leader should seek feedback from the participants. Through discussion, the leader should highlight the key aspects of the activity. Firstly, the leader should ensure that the participants are capable of defining the various elements learned during the activity and, secondly, the leader should identify means by which their new skills might be applied to other situations in their daily lives.
14. **Information for Parents.** Joining instructions (Annex C) and authorization forms should be provided for every activity involving cadet participation. The instructions should cover the following points:
- a. description of activity;
  - b. contents and inherent risks of the activity;
  - c. contact for parents;
  - d. contacting the parents;
  - e. medical statement form (Annex A); and
  - f. consent and risk awareness form (Annex B).

## POST-ACTIVITY

15. Once the activity has been completed, every aspect should be reviewed. This will involve a re-assessment of the ratio, the number of participants and their prerequisites, the duration and timing of the activity, the number of instructors and their qualifications, the equipment, the site, the facilities, the safety procedures (emergency plan), the preliminary planning, etc. Each element should therefore undergo a separate review aimed at improving the activity on the next occasion. A logbook can be kept for both instructors and participants and used to compile information concerning the activity and the learning/experiences of the participants.
16. Before placing the equipment in storage, an inspection and evaluation should be carried out to ensure the maintenance, repair or replacement of obsolete/damaged equipment. Care should also be taken to ensure that the equipment storage area is adequate and capable of preventing damage to the equipment until the next time it is used.





**ANNEX A**  
**MEDICAL INFORMATION**

Section A – Medical Condition		
Yes	No	
		1. Has your doctor ever told you that you have a heart problem <b>and</b> that you should only take part in physical activities prescribed and approved by a medical doctor?
		2. Do you ever experience chest pain while engaging in physical activity?
		3. In the past month, have you ever experienced chest pain at times when not engaging in a physical activity?
		4. Do you ever experience balance problems associated with dizziness or have you ever lost consciousness?
		5. Do you have bone or joint problems that may be aggravated by a change in your level of participation in a physical activity?
		6. Are you currently being prescribed medication to control your blood pressure or a heart problem (e.g. diuretics)?
		7. Are you aware of any <b>other reasons</b> why you should not engage in physical activity?
Section B – Are You Suffering From or Have You Ever Suffered From		
Yes	No	
		Epilepsy
		Hemophilia
		Psychiatric problems
		Serious allergies (e.g. nuts, peanuts, stinging insects, hypersensitivity to cold)
		Asthma
		Diabetes
Section C – General		
Yes	No	
		Are you pregnant?
		Have you undergone surgery during the past 10 months?
		Are you currently taking any medication(s)? If so, please indicate:
		Do you have any dietary restrictions? If so, please indicate:
		Do you have any physical restrictions that would affect your participation in the entirety of adventure training? If so, please indicate:
Section D – Participant Statement		
Please read carefully and initial each paragraph.		<b>Initials</b>
I hereby declare that I am not under the influence of alcohol or any drug, and I formally pledge to refrain from using drugs or alcohol during the activity.		
I hereby declare that I have read, understood and agreed to the provisions in this document and that all the information contained herein is true.		
Signature _____ Date _____ Year _____		
Name of Parent or Tutor _____ Signature of Parent or Tutor _____ (Required for participant under 18 years of age)		

Figure 1A-1 Medical Information Form

**ANNEX B**  
**CONSENT TO ADVENTURE TRAINING**

<b>Cadet ID Information</b>	
Name of Cadet:	First Name:
Telephone No.:	Emergency Telephone No.:
Provincial Health Insurance No.:	Expiry Date:
Name of Activity:	Activity Leader:
Location of Activity:	Dates of Activity:
Purpose of Activity:	
Details of Activity:	
<b>Parental Consent (please read carefully)</b>	
Name of Parent:	First Name:
I consent to the participation of my son/daughter or pupil in the requested cadet activity (activities). I am aware that the activity (activities) in which my son/daughter or pupil plans to participate is (are) dangerous and may result in a loss of limbs, injuries and/or trauma.	
I hereby declare that I have understood each of the provisions of this agreement.	
Parent Signature _____ Date _____	
<b>Participant Statement (please read carefully and initial each paragraph)</b>	
	Initials
The activity leader has explained, illustrated and demonstrated to me <b>to my satisfaction</b> the nature, risks and dangers of this activity and I accept these risks.	
I am aware that the activity in which I plan to participate is dangerous and may result in the loss of limbs, injury and/or trauma.	
I pledge to abide by <b>all the directives and instructions</b> issued by the activity leader, his/her guides, monitors or other officials.	
I hereby declare that I have understood each of the provisions of this agreement.	
Cadet Signature _____ Date _____	
Commander Signature _____ Date _____	
<b>Note:</b> Before signing, the commander must ensure that the expedition has been well planned and that the leader possesses the necessary qualifications.	

Figure 1B-1 Consent to Adventure Training Form

**ANNEX C**

**JOINING INSTRUCTIONS**

1. The following elements should be covered:
  - a. Name of activity.
  - b. Description of activity.
  - c. Purpose of activity.
  - d. Place and time of departure.
  - e. Place and time of arrival.
  - f. Location of activity.
  - g. Dates of activity.
  - h. Activity leader.
  - i. Number of participants.
  - j. Equipment required and equipment supplied.
  - k. Transportation.
  - l. Rations.
  - m. Contact telephone number.
  - n. Etc.

## CHAPTER 8

### MOUNTAIN BIKING

#### DESCRIPTION OF ACTIVITY

1. Mountain biking is defined within this chapter as any biking on trails and secondary roads. Biking on trails will from here after be referred to as off-road biking. Biking on secondary roads will from here after be referred to as road biking.

2. For the purpose of training in the CCM, mountain biking activities have been divided into six levels with two additional training components; introductory training and care and maintenance.

3. The care and maintenance training components are:

a. **Introductory Training**

- (1) safety while riding;
- (2) rules of the road;
- (3) hand signals;
- (4) selecting and fitting a bike;
- (5) equipment required for biking;
- (6) formations for riding;
- (7) stopping procedures;
- (8) communication while on bike; and
- (9) changing gears.

4. Care and maintenance training is essential for insuring that the bicycles and all equipment are properly cared for. Care and maintenance lectures should reflect the level of the training with more care and maintenance being required at higher levels of training. The use of SMEs is recommended for insuring that all bicycles are given an annual tune-up.

4A. **Rating Systems.** Many rating systems exist for mountain bike trails. The CCM rating system is a simplified version of the International Mountain Bicycling Association (IMBA) Trail Difficulty Rating System (TDRS). The IMBA TDRS (Figure 8-1) was created to help trail users make informed decisions, encourage visitors to use trails that match their skill level, manage and minimize risk, improve the outdoor experience and aid in the planning of trails and trail systems. The IMBA TDRS is divided into five categories based on width, trail surface, trail grade, obstacles and technical features. The CCM rating system combines similar categories of the IMBA TDRS creating three categories of trail conditions:

- a. **Familiarization Trails.** Mostly flat, hard packed surfaces with some hills that require limited skill to ascend and descend. Familiarization trails conform to the standards of the IMBA TDRS categories of "Easiest" and "Easy".
- b. **Intermediate Trails.** Some loose surface with minor obstacles such as roots and rocks with a variety of moderate hills that require skill to ascend and descend. Intermediate trails conform to the standards of the IMBA TDRS category of "More Difficult".
- c. **Advanced Trails.** A mix of flat, loose and technical terrain including hills with a variety of ascents and descents on steep and uneven terrain, cornering and obstacles such as roots, rocks and logs throughout the trail. Experienced trails conform to the standards of the IMBA TDRS categories of "Very Difficult" and "Extremely Difficult".






Trail Difficulty Rating System					
	Easiest White Circle 	Easy Green Circle 	More Difficult Blue Square 	Very Difficult Black Diamond 	Extremely Difficult Dbl. Black Diamond 
Trail Width	72 in. or more	36 in. or more	24 in. or more	12 in. or more	6 in. or more
Tread Surface	Hardened or surfaced	Firm and stable	Mostly stable with some variability	Widely variable	Widely variable and unpredictable
Average Trail Grade	Less than 5%	5% or less	10% or less	15% or less	20% or more
Maximum Trail Grade	Maximum 10%	Maximum 15%	Maximum 15% or greater	Maximum 15% or greater	Maximum 15% or greater
Natural Obstacles and Technical Trail Features (TTF)	None	Unavoidable obstacles 2 in. tall or less	Unavoidable obstacles 8 in. tall or less	Unavoidable obstacles 15 in. tall or less	Unavoidable obstacles 15 in. tall or greater
		Avoidable obstacles may be present	Avoidable obstacles may be present	Avoidable obstacles may be present	Avoidable obstacles may be present
		Unavoidable bridges 36 in. or wider	Unavoidable bridges 24 in. or wider	May include loose rocks	May include loose rocks
			TTF's 2 in. high or less, width of deck is greater than half the height	Unavoidable bridges 24 in. or wider  TTF's 4 in. high or less, width of deck is less than half the height  Short sections may exceed criteria	Unavoidable bridges 24 in. or narrower  TTF's 4 in. high or greater, width of deck is unpredictable  Many sections may exceed criteria

Figure 8-1 IMBA TDRS (www.imba.com)

5. The mountain bike levels are:
- a. **Level 1 – Familiarization Ride.** A familiarization ride is intended to introduce cadets to mountain biking. This ride will also allow the cadets to get used to the riding formations and communication signals used within the group.
  - b. **Level 2 – Day Trip On Road.** The day trip is intended to allow cadets to build on the skills learned during the familiarization ride. Cadets can also prepare for multi-day trips by beginning to carry light loads. Carrying light loads will give the cadets the opportunity to experience the new balance required while working with a loaded bike.
  - c. **Level 3 – Day Trip Off-road.** This trip is intended to allow cadets to build on the skills learned in Level 1 and 2 training. Cadets can progress to more difficult terrain off-road. Carrying light loads is recommended to prepare for higher-level training.
  - d. **Level 4 – Multi-Day Trip On Road.** Multi-day trips are intended for cadets with advanced knowledge and skills in mountain biking.
  - e. **Level 5 – Multi-Day Trip Off-road.** Multi-day trips are intended for cadets with advanced knowledge and skills in mountain biking. Off-road trips will be more demanding and will require greater technical skills in off-road riding.
  - f. **Level 6 – Multi-day Trip Off-road.** Highly intensive advanced training to be conducted in the most demanding environments.

#### **AIM OF ACTIVITY**

6. The aim of mountain biking within the CCM is to introduce cadets to the sport of mountain biking. Mountain biking also combines other skills such as communication, camping, physical fitness, leadership, and problem-solving that are taught in the CCM. Cadet activities can be supplemented with local biking groups and SMEs.

#### **CANADIAN REGULATIONS CONCERNING SPECIFIC ACTIVITIES**

7. The Canadian regulations surrounding the use of bicycles are derived mainly from the Highway Traffic Act for each province (this act is given a different name in some provinces). Bicycles are required to follow all rules and regulations outlined in the provincial legislature.

#### **MILITARY REGULATIONS**

8. There are currently no military regulations surrounding the use of bicycles. Some military bases require groups using bicycles to have vehicle support in the rear and front at all times when they are travelling on roads.

#### **CCO SAFETY REGULATIONS**

9. Cadets will never ride with more than one person on a bicycle. The only exception to this rule is if the bicycle is specifically designed to have multiple riders. In this case the number of riders will be determined by the individual bike specifications.

10. Cadets are required to have vehicle support in the rear, or on route to, at all times while travelling on roads. Cadets will never travel on freeways, or limited access highways. Cadets are permitted to travel on regional roads and secondary roads. While travelling off-road vehicle support is not necessary, unless the training is taking place on a military base that requires vehicle support. The group should be self-sufficient. Vehicles must have pre-determined extraction points for off-road training in the case of an emergency.

#### **AUTHORITY LEVEL**

11. Appropriate authority must be granted to carry out all forms of mountain biking activities. The authority is designated in the progression matrix at Annex A.

#### **GOVERNING BODIES**

12. There are no current national governing bodies surrounding the use of bicycles. Each province is responsible for regulating bicycle use. The Highway Traffic Act in each province determines the regulations for bicycle use.





13. Although there is no official governing body there are many well-developed cycling programs in Canada. Some of the cycling offices include:

- a. BTAC (Bicycle Trade Association of Canada) 1-866-528-BTAC (2822).
- b. CMIC (Canadian Mountain Bike Instructor Certification) this is only available in British Columbia 604-931-6606.
- c. National and provincial contacts can be found at Annex B.

## EQUIPMENT REQUIREMENTS

14. Safety equipment varies from province to province; however the CCM will follow one set of regulations for all provinces. These regulations are designed to meet or exceed the regulations of all provinces.

15. Safety equipment for each participant:

- a. **Canadian Standards Association (CSA) Approved Helmet.** The helmet must be snug and stable with proper chinstraps. The chinstraps must hold the helmet in the correct position on the head for proper protection. If a helmet suffers a crash or severe blow of any type the helmet must no longer be used.
- b. **Bicycle.** With both front and rear braking system, signaling device, i.e. horn or bell, red light or reflector in the rear, white light in the front, red reflectors in the rear, white reflectors in the front. Lights must be used when travelling in night or low light conditions.
- c. **Clothing.** Pants must be tucked in, tapered or restricted to prevent from getting caught in the gear mechanism.
- d. **Water.** Cadets must have water with them while on mountain biking activities. Water bottle holders with water bottles can be mounted to the bicycle frame, or water bottles can be carried in panniers, or a camel pack hydration system can be used (camel pack hydration systems are the optimal choice for mountain biking activities).
- e. **Day Pack.** Panniers or backpacks must be used for Level 2 to 6 training. Day packs are not to exceed 30 L.
- f. **Reflective Vest.** Each group must have at least the rear person wearing a safety vest at all times.

16. Safety equipment require for the group:

- a. **First Aid Kit.** Must be complete with enough supplies for the number of members in the group.
- b. **Communications.** Communication within the group must be established in introductory training. Each group must have at least one method of contact with the safety vehicle. Group leaders must have visual contact with all participants at all times during the training.
- c. **Extra Food and Water.** The safety vehicle must carry extra food and water in case of the needs for re-supply. Individual groups will carry water purification systems appropriate to the local climate.
- d. **Basic Repair Kit.** Basic repair kits will hold maintenance tools to allow for complete tire change, chain link removal, and brake tightening.
- e. **Safety Vehicle.** Must carry complete backboard change and all first aid evacuation equipment.

## RECOMMENDED EQUIPMENT LIST

17. Participants may choose to wear sunglasses, biking shorts, extra padded seat covers, gloves, full face guard helmets, biking shoes and appropriate peddle attachments, bicycle computer, handlebar bag, reflective vest, rear view mirror or biking shirts. All camping equipment must be carried in panniers and day packs for Level 4 to 6 training. Level 4 and 5 training should try to be as self-sufficient as possible. Level 6 training activities must be completely self-sufficient.

18. Extra group equipment can be carried in the safety vehicle. Extra equipment can include wheel frames, tire inner tubes, complete bicycles, horns, bells, lights, batteries, helmets, tire patch kit, Allen wrenches, bike lube, pressure gauge, screwdriver set, chain, any extra repair items designated by SMEs. When packing for a mountain biking trip it is very important to consider space restrictions. Bikes are very limited in the amount of equipment that they can carry for several reasons. Day packs that are too big will become a safety hazard, and thus are limited to 30 L. Also panniers (both front and rear) cannot hold as much gear as a regular hiking pack would. When planning for tripping group leaders should keep these factors in mind.

## ■ RATION REQUIREMENTS

19. IMPs or fresh rations can be used in biking activities. High-energy bars and sports drinks are recommended as they will replenish depleted stores from the body and are very compact.

20. Appropriate amount for the number of meals expected to be served. One extra meal should be carried in case of any sort of delay on Level 2 to 6 training.

21. Preparation cooking over single burner mountain stoves is optimal as these stoves take up very little room. Rations can also be eaten cold if cooking equipment is not available. Eating cold rations is not recommended for extended trips.

## TRANSPORTATION REQUIREMENTS

22. When transporting bicycles, legislation dictates that all cargo must be secure. To achieve this bike brackets can be used inside of a cube van. It is the responsibility of the group leader to ensure that bikes are secure prior to all transportation. Bicycles can be individually wrapped in blankets and secured inside of a closed vehicle. Trailers can be used with appropriate bicycle brackets. Car mounted racks can be used to transport a smaller number of bicycles.

23. **Safety Vehicle.** Safety vehicles must travel in rear of, or on route to, all groups while on roads. The hazard lights must be on at all times while training is in progress, even when stopped for short breaks. Some military bases require that a second vehicle be in front of the group while on base. This vehicle must also have hazard lights on while training is in progress.

24. **Evacuation Vehicle.** The evacuation vehicle, can be the safety vehicle, must be capable of transporting an immobilized person on a backboard. If the evacuation vehicle is the safety vehicle and is away on an emergency, all training must stop. Training cannot take place without a safety vehicle. Having an additional vehicle for emergency use is optimal however this is not a requirement for training.

## CADET SKILL LEVEL

25. All cadets and staff must be briefed on the Highway Traffic Act prior to undergoing a familiarization ride. Any other municipal legislation or base regulations should be part of this briefing.

26. All cadets and staff will perform a pre-ride check of all personal equipment and bicycles prior to any movement. Staff is responsible for not only their own equipment but also for checking the group equipment and all cadets' equipment.

27. Cadets and staff must show proficiency in familiarization ride to be permitted to progress to day trips. Proficiency in this case also includes appropriate physical fitness level to complete the training.

28. Proficiency at the day trip level must be exhibited prior to multi-day trips.

29. Progression from familiarization ride to day trip to multi-day trip is advisable only when the group leader or SME feels that all participants are capable of completing the task successfully and safely.

30. Multi-day trips should be reserved for more senior cadets who have already participated in Level 1 and 2 training and who have displayed a particular interest in continuing on with mountain bike training.

31. All cadets should have a basic understanding of care and maintenance prior to conducting Level 2 and 3 training. All repairs must be done under the supervision of the group leader or SME.

## **PHYSICAL FITNESS**

32. In order to participate in mountain bike training, cadets must first participate in two periods of introductory training. The physical fitness requirements are outlined in the progression matrix at Annex A for each level of activity.

33. Although physical fitness levels are given as an indication of physical fitness required for the training, this is only a guideline. For Level 2 and 3 training, the aerobic fitness of participants should also be considered when choosing a route. Group leaders who are unsure of the endurance of expected candidates are encouraged to do more Level 2 and 3 training, increasing speed and length of the trip, to ensure success and suitability of candidates at Level 4 and 5. Level 6 requires the highest level of physical fitness and is expected to be the most demanding training level. Instructors should be at least at the same level of fitness as participants and should be setting an example for the whole group.

## **QUALIFICATIONS, EXPERIENCE AND FITNESS OF LEADERS AND OPI**

34. For introductory and Level 1 training, officer staff experienced in mountain biking can instruct training. Ensure that introductory training covers all required material as outlined in this chapter.

35. Since there are no current national authorities on mountain biking it is suggested that local SMEs be sought to aid in training. CANBIKE offers road biking and introductory bike handling training. For group leaders who are not qualified by CANBIKE training at least one level higher than the intended training is required. Group leaders should maintain a higher level of proficiency on the skills being taught than is expected of the cadets. Leaders must set the example for cadets to follow. Fitness level should also be higher than that expected of the cadets.

36. For instruction on care and maintenance, SMEs should be consulted when basic repairs exceed the knowledge of the group leader. All group leaders must be able to perform basic repairs to tires, brakes, and chains to conduct Level 2 and 3 training. For Level 4 to 6 group leaders must be able to repair a bike in remote locations. Major repairs need to be handled by SMEs or through professional bike repair.

37. Bike repair courses can be taken through local cycling shops or through BTAC.

38. For Level 1 to 3 training group leaders must have standard first aid.

39. For Level 4 to 6 training in remote areas the group leader should hold wilderness first aid or wilderness first responder qualifications. Leaders must be able to recognize potentially dangerous situations and maximize prevention in all circumstances. Group leaders must be ready for any circumstance in remote locations and be able to respond in an appropriate and timely manner.

40. Group leaders should have extensive prior experience for the level of training being conducted and personal experience at a higher level than being conducted. The use of SMEs is highly recommended for Level 4 and 5 training. SMEs must be employed at Level 6.

## **REQUIRED PREPARATORY WORK**

41. A complete recce of all training areas is required prior to taking cadets on any mountain biking trip. When physical reccees are not possible a map recce will suffice. When a map recce is to replace a physical recce, local SMEs should be consulted to help determine local conditions and difficulty of the terrain. Without exception the group leader shall carry out a physical recce of the training area when Level 6 training is being conducted.

42. Required plans with local authorities/rear party for Level 2 and 3 training group leaders should have a good knowledge of the local conditions. For Level 4 and 5 training it is highly recommended that local SMEs be contacted to help with planning training.

43. Each group must have contact with the safety vehicle. Contact by radio, cell phone or satellite phone can be used.

44. Each group must have at least one map of the pre-determined route. Having one map for the group leader and one for the cadet leading the group is suggested. Also the safety vehicle and any other support vehicles must have maps with the pre-determined routes. All maps should also show emergency evacuation points. Emergency evacuation points are to be given individual and separate names to prevent confusion in case of an emergency.

45. The OPI must be a commissioned officer for all training. Each group must have an officer escort. Senior cadets can, and are encouraged to lead the group, under officer supervision.

46. The OPI must be an officer who is familiar with cadet regulations surrounding training, adventure training, and mountain bike training. The OPI must also exhibit calm leadership skills and be able to recognize dangerous situations. The safety of the entire group, including SMEs is the responsibility of the OPI.

47. SMEs who are employed to help with training must be deemed to be equivalent in experience to at least a platoon commander.

#### **INSTRUCTOR TO CADET RATIOS**

48. Refer to progression matrix at Annex A.

#### **MAX AND MIN NUMBER OF PARTICIPANTS**

49. The minimum number of participants for any training activity is two plus one officer. Note that in Level 3 training gender specific staff must accompany cadets.

50. Once groups begin a planned route the group will not break up. The training will be conducted as a group. If an emergency situation occurs, all training will cease and the group will remain together until the situation is resolved (refer to emergency planning).

51. The maximum number of participants for any one activity is 30, including all staff. This number does not include support vehicles or the safety vehicle.

52. In cases where fragile environments are being used for training, this number will be reduced dependant on the local conditions. SMEs should be consulted to determine the maximum number of participants in these situations.

#### **MANAGEMENT GUIDELINES**

53. All biking should be done in proper formation and the slowest rider should determine the speed of the ride. Put the slower riders near the front of the group, but not as the lead rider.

54. The use of whistle commands is suggested to ensure effective communication.

55. Cadets must be given a stopping procedure prior to conducting training. This should include not remaining on the road while stopped and not stopping on a hill. All stopping should take place on level ground where there is sufficient room for all participants to stop. The exact stop location is to be determined by the lead rider in the group.

- 56. Cadets must be instructed on proper use of gears to prevent chains from falling off resulting in increased likelihood of accidents.
- 57. Tires should be pumped to the specifications on the individual tire. Do not over pump the tires or they will be more prone to popping.
- 58. Be advised that when road conditions change, from pavement, to trails, to gravel braking power will change. Proper braking technique must be taught prior to undergoing training.
- 59. Leaving enough space between riders is essential while on bikes. More space is required when going up or down hills and in difficult terrain.

### **TRAINING GUIDELINES**

- 60. All introductory training must be conducted prior to the introductory ride.
- 61. For Level 2 and 3 training more time must be spent on care and maintenance of equipment. SMEs should be consulted when repairs are beyond the knowledge of the group leader.

### **TIME OF DAY/YEAR REGULATIONS**

- 62. Level 1 and 2 training must be conducted during the day.
- 63. Under the guidance of an SME night riding is permitted under special educational circumstances. If night riding is to take place all bicycles must be equipped with front white lights and reflectors, rear red lights and reflectors. In this case all cadets and staff must also wear reflective vests.
- 64. Mountain bike training will be limited to spring, summer and fall training. Cadets will not ride in snow or ice.

### **DURATION AND INTENSITY LEVEL OF THE ACTIVITY**

- 65. Mountain biking training will never last longer than originally intended.
- 66. Maintaining an appropriate level of intensity to complete the training is the responsibility of the group leader. If the original intensity is deemed to be too much for the group the leader will adjust training as required. Any adjustment to training must be relayed to all other groups and to safety/support staff. New plans must also include alternation of emergency planning. For details, refer to the progression matrix at Annex A.

### **ENVIRONMENTAL CONSIDERATIONS**

- 67. Waste management for personal hygiene, food scraps, food containers and human waste for biking trips and training will follow camping skills of "minimum impact" at minimum and "no trace" in optimum conditions. The impact philosophy of camping and outdoor adventure is established in Chapter 1 and in the RCAC References Book.
- 68. Groups will be limited by the instructor to cadet ratios. The maximum allowable visitor at campsites will limit size of tripping groups. Special considerations must be given to environmentally sensitive areas, minimal impact must be imposed onto any given environment. Campsites (established or wilderness) should not have to support more than 15 visitors.

69. Environmentally sensitive areas must be respected. In areas of pristine wilderness group size will be limited based on suggestions of local SMEs. Any inadvertent damage to environmentally sensitive areas must be reported to local SMEs. If necessary the corps or group responsible will repair any damage under the direction of the local SMEs.

## **WEATHER CONSIDERATIONS**

70. Location and clothing requirements are to be determined by, and are the responsibility of the group leader. Local weather forecasts should be consulted in advance of the planned training. Seasonally appropriate comfortable clothing is recommended.

## **ABSOLUTE STOP CONDITIONS**

71. If an emergency situation arises all training will be stopped immediately. Training will not resume until the situation has been resolved to the satisfaction of the group leader. All accidents or emergency situations will be reported to the OPI and to the safety vehicle. Protocol for minor and major first aid emergencies will be determined prior to undergoing training. In cases where the safety vehicle can assist they will do so promptly. If an emergency evacuation needs to take place, the safety vehicle and the group will move as quickly as possible to the evacuation point. The safety vehicle will have maps to local hospitals or medical centres with them. If necessary the safety vehicle will contact EMS and will escort EMS to the evacuation point. If EMS cannot reach the evacuation point the safety vehicle will transport the casualty to EMS and will follow EMS to the hospital. Safety at all times is the responsibility of the group leader.

## **RISK ASSESSMENT AND MANAGEMENT**

72. Within this chapter there are some basic considerations for risk assessment guidelines. These guidelines are an outline but this is not an exhaustive list. The assessment of risk in individual situations is the responsibility of the group leader:

- a. temperature;
- b. equipment;
- c. age, and experience of participants;
- d. local weather conditions; and
- e. skill level of the leader.

## **DEBRIEF**

73. The personal challenges each participant will meet can be discussed in a learning/supportive environment. Group leaders should be especially aware of difficulties some participants may have encountered and use judgment in adapting group debriefs. It may be more appropriate to discuss some issues in private. Depending on the intensity of the experience, some participants may require some personal time or a team activity immediately following activity. Staff, especially developing leaders will require special attention and debrief.

## **LOGBOOK**

74. In order to progress to other/different mountain bike levels, participants will have to keep a record of their experience in the form of a logbook. Logbooks and journals are especially appropriate for the purpose of review and reflection in mountain bike activities since most participants will experience very different and personal things. A logbook or a journal offers the opportunity to log all the appropriate information and the many important details of the caving activity. Either the OPI or the SME/mountain biking leader must sign off logbooks if they are to be used as an assessment of performance or experience.

**ANNEX A**  
**MOUNTAIN BIKE PROGRESSION MATRIX**



Age	Star Level	Intensity of the Activity	Delivery Method	Progression of the Activity	Level	Amy Cadet Physical Fitness Level	Group Size	Instructor to Cadet Ratio	Training Provider	Technical Instruction/Leadership	Authority
12-18	Green to NSCE	Famil	Lecture	2 x 40-min Periods	Level 1	None	25	1:20	LHQ	First Aid	Detachment
12-18	Green to NSCE	Famil	Lecture	1 x 40-min Period (Note 1)	Level 1	None	25	1:20	LHQ	First Aid	Detachment
12-18	Green to NSCE	Famil	Familiarization Ride	30-60 min	Level 1	None	30	1:10	LHQ	First Aid	Detachment
14-18	Red to NSCE	Intermediate	Day Trip, Road	1 Day, 40-60 km (Note 2)	Level 2	Bronze	30	1:10	LHQ/Zone/Region	First Aid	Detachment/Region
14-18	Red to NSCE	Intermediate	Day Trip, Off-road	1 Day, 40-60 km (Note 2)	Level 3	Bronze	30	1:10	LHQ/Zone/Region	First Aid	Detachment/Region
15-18	Silver to NSCE	Advanced	Multi-Day Trip Road	3-4 Days, 40-60 km (Note 2)	Level 4	Silver	30	1:10	LHQ/Zone/Region	Wilderness First Aid or Wilderness First Responder Qualifications	Detachment/Region
15-18	Silver to NSCE	Advanced	Multi-Day Trip Off-road	3-4 Days, 40-60 km (Note 2)	Level 5	Silver	30	1:10	Zone/Region/National	Wilderness First Aid or Wilderness First Responder Qualifications	Region/National
16-18	NSCE	Advanced	Multi-Day Trip Off-road	4+ Days, 40-60 km (Note 2)	Level 6	Gold	30	1:05	Zone/Region/National	Wilderness First Aid or Wilderness First Responder Qualifications	Region/National
<p style="text-align: center;"><b>NOTES</b></p> <ol style="list-style-type: none"> <li>Additional care and maintenance periods of instruction are suggested for multi-day trips.</li> <li>40-60 km depending upon the terrain and difficulty of the trip.</li> </ol>											

Figure 8A-1 Mountain Bike Progression Matrix

## **ANNEX B**

### **NATIONAL AND PROVINCIAL CYCLING ASSOCIATIONS**

#### **Alberta Bicycle Association**

Executive Director: Shannon Fikkert  
11759 Groat Road  
Percy Page Centre  
Edmonton, AB T5M 3K6  
Telephone: 780-427-6352  
Fax: 780-427-6438  
Email: office@albertabicycle.ab.ca  
Website: www.albertabicycle.ab.ca

#### **Bicycle Newfoundland and Labrador**

President: John French  
P.O. Box 2127, Station C  
St. John's, NF A1C 5R6  
Telephone: 709-754-1800  
Fax: 709-754-2701  
Email: bnl@bnl.nf.ca  
Website: www.bnl.nf.ca

#### **Bicycle Nova Scotia**

Administrator: Ike Whitehead  
P.O. Box 3010 South  
Halifax, NS B3J 3G6  
Telephone: 902-425-5450, ext. 316  
Fax: 902-425-5606  
Email: canoens@sportns.ns.ca  
Website: www.bicycle.ns.ca

#### **Canadian Cycling Association**

702 – 2197 Riverside Drive  
Ottawa, ON K1H 7X3  
Telephone: 613-248-1353  
Facsimile: 613-248-9311  
Email: general@canadian-cycling.com

#### **Cycling Association of Yukon**

President: Bob Boorman  
P.O. Box 6158  
Whitehorse, YK Y1A 5L7  
Telephone/Fax: 867-668-2321  
Email: josee.bob@yt.sympatico.ca

#### **Cycling British Columbia**

General Manager: Tanya Camposano  
332-1367 West Broadway  
Vancouver, BC V6H 4A9  
Telephone: 604-737-3034  
Fax: 604-737-3141  
Email: office@cycling.bc.ca  
Website: www.cycling.bc.ca

**Cycling PEI**

Executive Director: Karen Cameron  
P.O. Box 302  
Charlottetown, PE C1A 7K7  
Telephone: 902-368-4110  
Fax: 902-368-4548  
Email: [cycling.pei@pei.sympatico.ca](mailto:cycling.pei@pei.sympatico.ca)  
Website: <http://www3.pei.sympatico.ca/~cycling.pei/>

**Fédération québécoise des sports cyclistes**

Coordonnateur général: Pierre Thibault  
4545 Pierre-de-Coubertin  
Montréal, QC H1V 3R2  
Telephone : 514-252-3071  
Fax: 514-252-3165  
Email: [info@fqsc.net](mailto:info@fqsc.net)  
Website: [www.fqsc.net](http://www.fqsc.net)

**Manitoba Cycling Association**

Executive Director: Mike McKee  
200 Main Street  
Winnipeg, MB R3C 4M2  
Telephone: 204-925-5686  
Fax: 204-925-5703  
Email: [cycling@sport.mb.ca](mailto:cycling@sport.mb.ca)  
Website: [www.cycling.mb.ca](http://www.cycling.mb.ca)

**Ontario Cycling Association**

1185 Eglinton Avenue East  
North York, ON M3C 3C6  
Telephone: 416-0426-7242, ext. 7642  
Fax: 416-426-7349  
Email: [info@ontariocycling.org](mailto:info@ontariocycling.org)  
Website: [www.ontariocycling.org](http://www.ontariocycling.org)

**Saskatchewan Cycling Association**

Executive Director: Warren Lister  
2205 Victoria Avenue  
Regina, SK S4P 0S4  
Telephone: 306-780-9289  
Fax: 306-525-4009  
Email: [cycling@ucomnet.unibase.com](mailto:cycling@ucomnet.unibase.com)  
Website: [www.saskcycling.ca](http://www.saskcycling.ca)

**Velo New Brunswick**

President: Aaron Hershoff  
P.O. Box 3145  
Fredericton, NB E3A 5G9  
Telephone: 506-773-7542  
Email: [hershoff@nbnet.nb.ca](mailto:hershoff@nbnet.nb.ca)  
Website: [www.velo.nb.ca](http://www.velo.nb.ca)

CANBIKE Website: <http://www.canadian-cycling.com/English/home.htm>. Retrieved 25 October 2006.

## GLOSSARY

### **Adventure Centre**

Adventure centre consolidates resources that are above the LHQ level to provide challenging adventure training opportunities that further develop skills while promoting personal growth.

### **Adventure Training**

Adventure training is the vehicle to develop leadership skills, teamwork and personal growth through challenging adventure activities, with a perception of risk. It creates both physical and mental challenges that are designed to promote and maintain enthusiasm towards the Army Cadet program.

### **Army Cadet Challenge**

An adventure race for Army Cadets that challenges their adventure, bush craft, fieldcraft and leadership and fitness.

### **CAATC**

The Cadet Adventure and Athletic Training Club is an informal group within the LHQ that meets to participate in extra adventure and physical fitness training and activities.

### **Day Instruction**

Usually occurring in or near an urban or rural centre; single site oriented; less than 30 minutes from support services.

### **Day Tripping**

Usually close to a municipality, but involving some travel through a parkland area, private or public property; 30 minutes to three hours from support services.

### **“Due Diligence”**

Actions expected of a reasonable person to manage risks.

### **Expedition**

An expedition is any activity that consists of dynamic travel of **no less than 36 hours** in duration, where there is a clear goal associated with the activity. Expeditions include Army Cadet Adventure Training Activity (ACATA) components and inherently practice the application of star program skills.

### **Level of Activity – Advanced**

- a. Few new skills are introduced;
- b. Success depends on participants drawing heavily from previous training and experiences and adapting to meet challenges of activity/training;
- c. Duration and intensity are now at their highest level;
- d. Participants may have varying degrees of success;
- e. Risk, both perceived and real, is considered significant to all;
- f. Support requirements normally exceed those that the LHQ or zone can provide;
- g. Location is remote and outside assistance may not be immediately available; and
- h. The nature of the terrain or water features poses numerous hazards that are not immediately apparent to participants.

## **GLOSSARY (Cont)**

### **Level of Activity – Basic**

- a. New skills are introduced and previously learned skills are practiced and perfected;
- b. Conducted as an activity/training session where participants are required to demonstrate competency in skills;
- c. Duration (and intensity) of training has increased from the familiarization level;
- d. Participants are introduced to new or different training locations;
- e. Element of risk remains low; and
- f. Support requirements to accomplish activity/training can usually be filled by the LHQ.

### **Level of Activity – Familiarization**

- a. New skills are introduced and practiced as a participatory activity;
- b. Short duration;
- c. Low perceived risk;
- d. Participants and instructors easily forecast results of their actions;
- e. The degree of support in terms of instructors, equipment and expenditure is low;
- f. Activity/training location is easily accessible; and
- g. Participants easily recognize any hazards.

### **Level of Activity – Intermediate**

- a. New technical skills are introduced and perfected;
- b. Extended duration, increased intensity and more removed training location create the challenge for participants;
- c. Perceived risk for the participants is greatly increased and risk management becomes a more important role for the leaders/instructors;
- d. Results of the training are not easily forecast by participants; however all are still confident and feel in control of the situation;
- e. Support requirements normally exceed those that the LHQ can provide; and
- f. The RCSU or D Cdts would generally supply some or all specialized instructors/leaders/equipment and funding.

### **LHQ**

Local Headquarters – the environment of a cadet when not at a Cadet Summer Training Centre; it includes the community and surrounding area as well as the resources available to the Corps within that area.

### **Liability**

The state of being liable. The nature of the cadet movement means that CIC members may be considered liable to civil and military authorities. In some circumstances cadets may be considered liable for their actions/non-actions.

### **“Minimum-Impact”**

This term describes a conscientious method of planning, preparing for, and conducting outdoor training so that it makes as little as possible or no impact on the natural environment; this includes the reduction of impact on wildlife and the enjoyment of the outdoor experience by other persons. **“No-Trace” camping** is a more strict application of minimum impact practices.

## GLOSSARY (Cont)

**Mountaineering** (Ref: Mountaineering Techniques CF Publication)

**Anchor Rope.** A rope tied to an anchor to secure a belayer.

**Balance Climbing.** The basic technique of mountain movement generally requiring only the use of hands for balance. Mainly refers to rock climbing without the use of the climbing rope or other specialized aids.

**Belaying.** To secure or be secured with a rope against a possible fall by a climber.

**Bight.** A simple turn of rope which does not cross itself.

**Chimney.** A vertical fissure in rock large enough to accommodate the body of a climber.

**Chute.** A chute-like crack in rock or terrain caused by erosive action, generally wider than a chimney, vertical or sloping.

**Commando Crawl.** A method of crawling on top of a rope by laying on the chest with one leg and foot hooked over the rope and letting the other leg hang down pulling with the hands.

**Crack.** A fissure in rock or ice, varying in size, accommodating a piton, hand, foot or log.

**Exposed Climb.** A climb from which a fall would be severe or fatal.

**Face of Rock.** The sheer, unbroken front of a cliff or rock.

**Fissure.** A crack in rock or ice.

**Fixed Rope.** A rope or series of ropes installed and secured to aid climbers in overcoming difficult terrain.

**Free Climbing.** Climbing without a rope or other aids.

**Gully.** A shallow, narrow ravine caused by erosion.

**Half Hitch.** A loop, which runs around an anchor or anchor rope so as to lock itself.

**Hold.** A rock or man-made support ice or snow used by a climber in progressing from one position to another. Method of using such support.

**Knot.** A fastening made by intertwining or tying together pieces of rope.

**Loop.** Simple turn of a rope which crosses itself.

**Mountaineering.** The art of mountain climbing.

**Piton.** A metal wedge driven in rock or ice used to provide support.

**Rappelling.** The process whereby a climber lowers himself by sliding down a climbing rope.

**Rock Fall.** The fall of any quantity of rock on a mountain.

**Rope.** A strong cord made of intertwisted strands of fibres.

## GLOSSARY (Cont)

### Mountaineering (Cont)

**Scree.** Small unconsolidated rocks and gravel (or smaller) located mostly below rock ridges and cliffs.

**Scree Slope.** Slope covered with scree.

**Slab.** A relatively smooth portions of rock laying at an angle.

**Sound Rock.** Firm rock which holds together well. The opposite of rotten rock.

**Standing Part.** Anchored portion of rope.

**Talus.** Accumulation rock debris, fallen from dominant rock ridge or face, larger than scree or large blocks, unconsolidated in nature.

**Talus Slope.** Slope covered with talus.

**Tension Climbing.** Climbing with the aid of pitons, in which the belayer holds the climber on the rock and assists his progress with tension in the rope (pulley system).

**Traversing.** Ascending or descending diagonally instead of straight up and down.

**Tyrolean Travers.** A method used in mountaineering go around obstacles by the use of rope bridge and rappel seat, sometimes pulling with the hands.

**Wall.** A vertical or near vertical portion of mountain, rock or ice cliff.

**Working End.** Free end or the end of the rope, which is being worked.

### Orienteering (Canadian Orienteering Federation)

**Beginners.** Individuals who are learning the basic skills.

**Beginner or Wayfarers.** Recreational.

**Class A.** Denoting the most advanced class.

**Class B or Open.** Denoting shorter and/or less technically demanding courses.

**Class E.** Reserved for special Elite classes.

### Types of Orienteering Events

**Cross-country Orienteering.** Participants visit controls in a specified order. The winner is the participant who completes the course in the shortest elapsed time.

**Score Orienteering.** Participants score points by finding controls in any order within a specified time. The winner is the participant with the highest point total.

Either of the above types of event may be: night event, relay or team race.

## GLOSSARY (Cont)

### Orienteering (Cont)

**Relay Race.** Teams of individuals compete consecutively and are ranked against other teams.

**Team Race.** A specified number of individual times of team members are added together; ranking is according to these total times.

**Wayfarers.** Groups of two or more individuals who complete a course together helping one another.

#### Principal Officials of an Orienteering Meet

The **Meet Director** shall take responsibility for the meet. The Meet Director shall appoint such further officials as are necessary and see that they understand and fulfill their duties.

The **Course Planner** shall design the courses and be responsible for preparing the control markers, punches, competition maps, control description lists and for the correct placing of the control markers and punches prior to the event.

The primary tasks and responsibilities of the **Controller** shall be:

- a. check the quality of the map and to recommend necessary revisions;
- b. check the start and finish areas and all control locations for correct position and suitability;
- c. check that the general standard of the course is in accordance with current rules and standards of course planning;
- d. check that the course as planned is fair to all participants particularly with regard to the quality of map detail;
- e. check that the terrain and course are safe for participants with respect to hazards and dangerous locations.

More extensive description of a controller's functions are given in the *"A" Meet Organizing Manual* and the *Controllers Handbook*.

### Overnight Tripping

Usually occurring on public lands (e.g. National or provincial parks) which are some distance from nearest municipality; three hours to 12 hours from assistance. Usually has duration of one to five days (one to three nights).

**Paddling** (CRCA Manuals, American Canoe Association Instructors Manual, A-CR-CCP-030/PT-001, Watercraft Safety Orders)

**Big Water or River.** Refers to very big rivers or reasonable size rivers in flood conditions. Typically, river capacity is measured in cubic meters per second ( $\text{m}^3/\text{s}$ ) or cubic feet per second ( $\text{ft}^3/\text{s}$ ). A river is considered big when it has a greater capacity than  $750 \text{ m}^3/\text{s}$  or  $25\,000 \text{ ft}^3/\text{s}$ .

**Canoe.** Light open boat propelled by paddle(s).



## GLOSSARY (Cont)

### Paddling (Cont)

**Canoe Training.** Training limited to single location from which the class usually moves no more than 30 minutes or 1000 metres from the put-in point.

**Canoe Tripping.** It is any canoe activity that moves more than 30 min or 1000 m from the put-in point.

**Flat Water.** Describes paddling conditions in calm, relatively flat water with no noticeable current.

**Kayak.** Light closed boat propelled by paddle(s).

**Lake Water.** Describes similar paddling conditions as flat water. Typically, lake water paddling refers to the highly advanced performance of flat water paddling manoeuvres to an aesthetic standard. Lake water is the progression of flat water manoeuvres to choreographed sequences, resulting in canoe ballet or canoe dance.

**Moving Water.** Refers to any water that has a discernible current typically assessed with the International Scale of River Difficulty (Class 1 to 6).

**Ocean, Coastal and Open Water.** Refers to paddling conditions in very large bodies of water that would behave like an ocean, e.g. seas, very large bays and very large lakes.

**Reasonable Visibility.** It is a paddling condition measured by the ability for each paddlers to see the entire group, the lead craft must also be able to see the equivalent distance ahead.

**Voyageur Canoës.** They vary in size and construction. They are usually much bigger than conventional Canadian canoes and measure at least 6 m in length. Some modern materials are used for performance but traditional materials like wood, bark and canvas are used in historical reproduction. Regardless of the construction, the voyageur canoe is built of a sturdy frame, robust shell.

**White Water.** It is sometimes used in reference to violent moving water. As a generic term, moving water encompasses white water.

**Wilderness Paddling or Wilderness Trips.** Describes paddling in a remote, wilderness settings with limited road/rail access, limited communications, difficult evacuation procedures and/or environmentally sensitive areas.

### Risk Management

The management of risk factors surrounding an activity to reduce accident potential. The management is done thorough study of, and preparation for, areas of risk involved in training. It also includes constant monitoring of safe conduct of training and immediate response to changing situations. Each CIC officer who conducts adventure training assumes the element of risk involved in the activity and is responsible to manage it reasonably.

### “Standard of Care”

The expected level of competency of an outdoor leader, and/or program, when compared to equivalent professional activities.

## **GLOSSARY (Cont)**

### **Terrain Skills**

The skill of safely moving a group across terrain. At the simplest level it would be crossing obstacles, and at the high end it would be mountaineering.

### **Transportation Skill**

A method of non-motorized transport that holds a special and historical significance to a region/zone/LHQ where participation in this training/activity would also have cultural importance. An example could be dog sledding, or voyageur canoeing.

### **Wilderness Tripping**

Often involving some travel, usually significant distance or significant challenge in remote wilderness regions, isolated from well-populated areas; more than 12 hours from support services. Usually has a longer duration than an overnight trip, three to 15 days (two to 14 nights).

### **Zone**

“Zone” is a generic name to describe a division within a region where Army Cadet Corps are associated for purposes of support and/or training. Zones can host training and activities.







**EO S226.04 – PARTICIPATE IN A FIVE-DAY EXPEDITION**

1. **Performance.** Participate in a Five-Day Expedition.
2. **Conditions**
  - a. Given:
    - (1) Personal equipment, to include:
      - (a) expedition field pack,
      - (b) sleeping bag,
      - (c) waterproof compression sack,
      - (d) air mattress,
      - (e) clothing,
      - (f) rain gear,
      - (g) valise/stuff sack,
      - (h) food,
      - (i) water bottle,
      - (j) re-sealable plastic bags (small and large),
      - (k) garbage bags,
      - (l) carabiner,
      - (m) expedition field pack repair kit, and
      - (n) personal essentials, to include:
        - i. sunscreen,
        - ii. bug repellent,
        - iii. lip balm,
        - iv. camp soap (biodegradable),
        - v. tooth brush,
        - vi. toothpaste,
        - vii. toilet paper, and
        - viii. headlamp/flashlight;
      - (o) mountain bike,
      - (p) helmet,
      - (q) bell or horn,
      - (r) lights and reflectors,

- (s) PFD,
    - (t) whistle,
    - (u) tether line,
    - (v) paddle, and
    - (w) pen/pencil;
  - (2) Group equipment, to include:
    - (a) tent,
    - (b) single-burner mountain stove,
    - (c) fuel bottle,
    - (d) fuel,
    - (e) pot set,
    - (f) folding saw,
    - (g) water filter,
    - (h) rope,
    - (i) compass,
    - (j) hand-held radio,
    - (k) topographical map or trail map of the area,
    - (l) glow sticks,
    - (m) first-aid kit,
    - (n) knife,
    - (o) reflective vest,
    - (p) bike maintenance tool,
    - (q) tandem canoe, and
    - (r) canoe safety equipment;
  - (3) Supervision, and
  - (4) Limited assistance as necessary.
- b. Denied: N/A.
- c. Environmental:
- (1) Field setting,
  - (2) Class One/Two hiking terrain IAW A-CR-CCP-951/PT-002,
  - (3) Novice mountain bike trails IAW A-CR-CCP-951/PT-002 during daylight hours, and

- (4) Flat water IAW A-CR-CCP-030/PT-001 during daylight hours.
3. **Standard.** The cadet shall participate in a five-day expedition, to assess:
- PO S222 (Navigate a Route During an Expedition, Section 2),
  - PO S226 (Follow Expedition Routine),
  - PO S250 (Reflect on Expedition Experiences, Section 5),
  - PO S251 (Ride a Mountain Bike During an Expedition, Section 6), and
  - PO S252 (Paddle a Canoe on Flat Water During an Expedition, Section 7).
4. **Teaching Points.** Using three modes of travel, the cadet will participate in a five-day expedition, to include:
- following expedition routine, while camping overnight for four nights, to include:
    - inspecting campsites; and
    - setting up, tearing down and departing campsites daily;
  - logging at least four theme-based entries in the Basic Expedition Journal, during designated evening reflective periods in a quiet place, away from any distraction, for a minimum of 15 minutes;
  - navigating as a leader of a group of no more than 10 between two given points;
  - trekking a 8–16 km route over one-day;
  - riding a mountain bike for 25–35 km over two-days; and
  - paddling a canoe for 15–25 km over two-days.
5. **Time.** Five consecutive days, 40 periods.
6. **Substantiation.** An experiential approach was chosen for this lesson as it allows the cadet to acquire new knowledge and skills, such as mountain biking and paddling, through a direct experience. The cadet experiences an expedition and defines that experience at a personal level. The cadet will be given the opportunity to reflect and examine what they saw, felt and thought while on the expedition, and consider how it related to what they had already learned as well as how it will relate to future experiences.
7. **References.** N/A.
8. **Training Aids.** As per paragraph 2.
9. **Learning Aids.** As per paragraph 2.
10. **Test Details.** This EO is the practical assessment opportunity for S221 (Chapter 3, [Annex B](#)), S222 (Chapter 3, [Annex B](#)), S250 (Chapter 3, [Annex B](#)), S251 (Chapter 3, [Annex B](#)) and S252 PCs (Chapter 3, [Annex B](#)).
11. **Remarks**
- The adventure activity may be scheduled to form a sixth day of the expedition.
  - Within the 40 periods allotted, the cadet should experience a variety of trails and terrain when trekking and mountain biking. Time spent on modes of travel will vary depending on regional resources. The duration and challenge of activities shall be appropriate for a 13–14 year old cadet in good physical condition.



- c. Journal entries shall be completed during evenings in a journal environment that:
  - (1) provides each cadet a minimum of 15 uninterrupted minutes;
  - (2) accounts for those cadets who will require more than 15 minutes to complete an entry (eg, no training to be completed directly after);
  - (3) allows each cadet space to be free from other cadets; and
  - (4) allows each cadet to go wherever they wish (within given set boundaries).
- d. During the expedition safety briefing, cadets should be informed of potential wildlife encounters and preventative actions.
- e. Teachable moments are situations that naturally arise during the course of the day and provide opportunity for discussion. These moments will reinforce the corps program and should be taken advantage of throughout the expedition. Take time to explain and emphasize program material as it arises. Some of these moments could include:
  - (1) navigation,
  - (2) Leave No Trace,
  - (3) foot care,
  - (4) packing and adjusting an expedition pack,
  - (5) basic astronomy,
  - (6) wildlife, and
  - (7) use of equipment, etc.

**SECTION 6****PO S251 – RIDE A MOUNTAIN BIKE DURING AN EXPEDITION**

1. **Performance.** Ride a Mountain Bike During an Expedition.
2. **Conditions**
  - a. Given:
    - (1) Mountain bike,
    - (2) Helmet,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Novice mountain bike trails IAW A-CR-CCP-951/PT-002 during daylight hours, during an expedition.
3. **Standard.** The cadet will ride a mountain bike on trails not to exceed Level 3 – Day Trip Off-Road, during an expedition, to include:
  - a. fitting a mountain bike; and
  - b. demonstrating mountain bike skills when riding, to include:
    - (1) shifting gears;
    - (2) braking;
    - (3) gearing;
    - (4) ascending hills; and
    - (5) descending hills.
4. **Remarks.** N/A.

**EO S251.01 – DESCRIBE MOUNTAIN BIKE TRAILS**

1. **Performance.** Describe Mountain Bike Trails.
2. **Conditions**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard.** The cadet shall describe mountain bike trails, to include:
  - a. types of trails,
  - b. trail etiquette, and
  - c. trail and road safety.
4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Introduce mountain bike trails, to include: <ol style="list-style-type: none"> <li>a. the International Mountain Bicycling Association trail rating system for mountain bike use, to include:               <ol style="list-style-type: none"> <li>(1) novice trails,</li> <li>(2) intermediate trails, and</li> <li>(3) experienced trails; and</li> </ol> </li> <li>b. trail types available for mountain biking, to include:               <ol style="list-style-type: none"> <li>(1) multi-use trails,</li> <li>(2) single-use mountain bike trails,</li> <li>(3) double track trails, and</li> <li>(4) single track trails.</li> </ol> </li> </ol>	Interactive Lecture	10 min	C2-087 (p. 32) C2-090
TP2	Discuss the six codes of conduct that minimize the impact of mountain biking on the environment and on other trail users, to include: <ol style="list-style-type: none"> <li>a. riding on open trails only;</li> <li>b. practicing the principles of Leave No Trace;</li> <li>c. controlling your bicycle;</li> <li>d. giving way to other users;</li> <li>e. avoiding animals; and</li> <li>f. planning ahead.</li> </ol>	Interactive Lecture	10 min	C2-083 (p. 13) C2-087 (p. 31)

TP	Description	Method	Time	Ref
TP3	<p>Discuss the importance of following trail and road safety regulations when mountain biking, to include:</p> <p>a. using safety equipment, to include:</p> <p>(1) helmet,</p> <p>(2) reflective vest,</p> <p>(3) bell or horn, and</p> <p>(4) light and reflectors;</p> <p>b. adhering to the rules of the road for bikers;</p> <p>c. signalling, to include:</p> <p>(1) left,</p> <p>(2) right, and</p> <p>(3) stop; and</p> <p>d. riding discipline, to include:</p> <p>(1) formations for riding,</p> <p>(2) spacing,</p> <p>(3) stopping/starting procedures, and</p> <p>(4) road crossing.</p>	Interactive Lecture	15 min	<p>A2-001 (pp. 8-1 to 8-3)</p> <p>C2-089</p> <p>C2-092</p>

#### 5. Time

- |    |                          |        |
|----|--------------------------|--------|
| a. | Introduction/Conclusion: | 5 min  |
| b. | Interactive Lecture:     | 35 min |
| c. | Total:                   | 40 min |

6. **Substantiation.** An interactive lecture was chosen for this lesson to introduce and give the cadet direction on mountain bike trails, trail etiquette, and safety regulations.

#### 7. References

- A2-001 A-CR-CCP-951/PT-002 D Cds 3. (2006). *Royal Canadian Army Cadets Adventure Training Safety Standards*. Ottawa, ON: Department of National Defence.
- C2-083 (ISBN 0-07-149390-5) Brink, T. (2007). *The Complete Mountain Biking Manual*. Camden, ME: Ragged Mountain Press.
- C2-087 Badyk, M., Buck, K., Sahl, N., Schultz, R., & Vrooman, D. (1998). *Ontario Learn to Mountain Bike Clinic Workbook* (2<sup>nd</sup> ed.). Ontario Cycling Association and Ontario Recreational Mountain Bicycling Alliance.
- C2-089 Ministry of Transport Ontario. (2007). *Young Cyclists Guide*. Retrieved October 5, 2007, from <http://www.mto.gov.on.ca/english/safety/cycling/youngcyclist.htm>.
- C2-090 International Mountain Bicycling Association. (2007). *Trail Difficulty*. Retrieved October 10, 2007, from [http://www.imba.com/resources/trail\\_building/itn\\_17\\_4\\_trail\\_difficulty.html](http://www.imba.com/resources/trail_building/itn_17_4_trail_difficulty.html).

- f. C2-092 Ministry of Transport Ontario. (2007). *Cycling Skills: Cycling Safety for Teen and Adult Cyclists*. Retrieved October 5, 2007, from <http://www.mto.gov.on.ca/english/pubs/cycling/cyclingskills.htm>.

8. **Training Aids**

- a. Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,
- b. Mountain bike,
- c. Helmet,
- d. Reflective vest,
- e. Bell or horn, and
- f. Light and reflectors.

9. **Learning Aids.** N/A.

10. **Test Details.** This EO is assessed IAW Chapter 3, [Annex B](#) (Assessment of Learning Plan – Basic Expedition), S251 PC.

11. **Remarks.** N/A.

**EO S251.02 – FIT A MOUNTAIN BIKE**

1. **Performance.** Fit a Mountain Bike.
2. **Conditions**
  - a. Given:
    - (1) Mountain bike,
    - (2) Helmet,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Outside, during daylight hours.
3. **Standard.** The cadet shall select and fit a mountain bike, to include:
  - a. selecting a bike using size by eye;
  - b. sizing using the stand-over test; and
  - c. adjusting the seat to the correct height.
4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Discuss types of bikes, to include: <ol style="list-style-type: none"> <li>a. road,</li> <li>b. mountain,</li> <li>c. hybrid, and</li> <li>d. touring.</li> </ol>	Interactive Lecture	5 min	C2-095
TP2	Identify parts of the mountain bike, to include: <ol style="list-style-type: none"> <li>a. handlebar,</li> <li>b. gear shifter,</li> <li>c. brake lever,</li> <li>d. stem,</li> <li>e. top tube,</li> <li>f. front fork,</li> <li>g. tire,</li> <li>h. rim,</li> <li>i. spoke,</li> <li>j. hub,</li> <li>k. quick release,</li> <li>l. dropout (front and rear),</li> </ol>	Interactive Lecture	15 min	C2-082 (pp. 356–362) C2-084 (p. 12, p. 13, pp. 234–239) C2-088 (p. 18)

TP	Description	Method	Time	Ref
	m. derailleur (front and rear), n. chainring, o. chainset, p. crank, q. pedal, r. chain, s. chainstay, t. cogs, u. cassette, v. brakes, w. seat tube, x. seat post release, y. seat post, and z. saddle.			
TP3	Demonstrate and have the cadet select and adjust a mountain bike, to include: a. selecting a helmet; b. adjusting the helmet; and c. sizing a mountain bike, to include: (1) size by eye, (2) stand-over test, and (3) saddle adjustment.	Demonstration and Performance	50 min	C2-088 (p. 22, p. 23, p. 32) C2-089

## 5. Time

a.	Introduction/Conclusion:	10 min
b.	Interactive Lecture:	20 min
c.	Demonstration and Performance:	50 min
d.	Total:	80 min

## 6. Substantiation

- An interactive lecture was chosen for TPs 1 and 2 to give the cadet an overview of the different types of bikes and present them with general information about the parts of a mountain bike.
- Demonstration and performance was chosen for TP 3 as it allows the instructor to explain and demonstrate selecting and adjusting a mountain bike while providing an opportunity for the cadet to practice the skill under supervision.

## 7. References

- C2-082 (ISBN 1-57954-883-0) Downs, T. (2005). *Bicycle Maintenance & Repair for Road & Mountain Bikes*. USA: Rodale Inc.

- b. C2-084 (ISBN 1-55297-734-X) Allwood, M. (2004). *Mountain Bike Maintenance: The Illustrated Manual*. Richmond Hill, ON: Firefly Books Ltd.
- c. C2-088 (ISBN 1-55297-653-X) Crowther, N. (2002). *The Ultimate Mountain Bike Book: The Definitive Illustrated Guide to Bikes, Components, Techniques, Thrills and Trails*. Toronto, ON: Firefly Books Ltd.
- d. C2-089 Ministry of Transport Ontario. (2007). *Young Cyclists Guide*. Retrieved October 5, 2007, from <http://www.mto.gov.on.ca/english/safety/cycling/youngcyclist.htm>.
- e. C2-095 The Care Exchange. (2007). *Bikes 101 - Bike types*. Retrieved October 5, 2007, from <http://www.caree.org/bike101biketypes.htm>.

8. **Training Aids**

- a. Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,
- b. Mountain bike,
- c. Helmet, and
- d. Gear/masking tape.

9. **Learning Aids**

- a. Mountain bike, and
- b. Helmet.

10. **Test Details.** This EO is assessed IAW Chapter 3, [Annex B](#) (Assessment of Learning Plan – Basic Expedition), S251 PC.

11. **Remarks.** N/A.



**EO S251.03 – PERFORM MOUNTAIN BIKE SKILLS**

1. **Performance.** Perform Mountain Bike Skills.
2. **Conditions**
  - a. Given:
    - (1) Mountain bike,
    - (2) Helmet,
    - (3) Water carrier,
    - (4) Supervision, and
    - (5) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Novice trails, IAW A-CR-CCP-951/PT-002 during daylight hours.
3. **Standard.** The cadet shall perform mountain bike skills, to include:
  - a. completing a pre-ride check;
  - b. performing mountain bike techniques, to include:
    - (1) mounting;
    - (2) dismounting;
    - (3) braking;
    - (4) shifting gears;
    - (5) ascending hills; and
    - (6) descending hills; and
  - c. completing a post-ride check.
4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Discuss required personal and group equipment, to include: <ol style="list-style-type: none"> <li>a. clothing,</li> <li>b. liquids,</li> <li>c. snacks,</li> <li>d. identification,</li> <li>e. helmet, and</li> <li>f. map and compass.</li> </ol>	Interactive Lecture	10 min	C2-087 (p. 26)

TP	Description	Method	Time	Ref
TP2	<p>Explain, demonstrate and have the cadet practice the procedure for completing a pre-ride bike check using the ABC Quick Check method, to include:</p> <ul style="list-style-type: none"> <li>a. air, to include:               <ul style="list-style-type: none"> <li>(1) tire air pressure,</li> <li>(2) wear on the tread or cuts on the sidewall,</li> <li>(3) true wheels,</li> <li>(4) looseness in the ball bearings in the hub;</li> </ul> </li> <li>b. brakes and bars, to include:               <ul style="list-style-type: none"> <li>(1) brake levers,</li> <li>(2) brake function,</li> <li>(3) headset, and</li> <li>(4) handlebars;</li> </ul> </li> <li>c. chain and crank, to include:               <ul style="list-style-type: none"> <li>(1) lubrication, and</li> <li>(2) pedals;</li> </ul> </li> <li>d. quick release, to include:               <ul style="list-style-type: none"> <li>(1) wheel, and</li> <li>(2) saddle; and</li> </ul> </li> <li>e. final check.</li> </ul>	Demonstration and Performance	20 min	C2-088 (p. 36, p. 37) C2-089
TP3	<p>Explain, demonstrate and have the cadet practice mountain bike techniques, to include:</p> <ul style="list-style-type: none"> <li>a. straddle mount,</li> <li>b. braking, and</li> <li>c. straddle dismount.</li> </ul>	Demonstration and Performance	20 min	C2-087 (p. 40, p. 42) C2-088 (p. 104, p. 113) C2-092
TP4	<p>Explain, demonstrate and have the cadet practice the mountain bike technique of gearing, to include:</p> <ul style="list-style-type: none"> <li>a. gear ratio,</li> <li>b. chainset,</li> <li>c. cassette,</li> <li>d. shifting gears, and</li> <li>e. gearing.</li> </ul>	Demonstration and Performance	20 min	C2-087 (p. 40) C2-088 (pp. 106–109) C2-092
TP5	<p>Explain, demonstrate and have the cadet practice mountain bike techniques, to include:</p> <ul style="list-style-type: none"> <li>a. ascending hills, to include:               <ul style="list-style-type: none"> <li>(1) position, and</li> </ul> </li> </ul>	Demonstration and Performance	25 min	C2-083 (pp. 112–118) C2-087 (p. 42)

TP	Description	Method	Time	Ref
	(2) gearing and shifting; and b. descending hills, to include: (1) position, and (2) gearing and shifting.			
TP6	Explain and demonstrate the procedure for completing a post-ride check, to include: a. cleaning; b. lubricating, to include: (1) chain, (2) cables, and (3) derailleurs; and c. assessing for repairs.	Demonstration	15 min	C2-088 (p. 44, p. 45, p. 52, p. 53)
TP7	Conduct a mountain bike familiarization ride and have the cadet practice: a. pre-ride check, b. mountain bike techniques, c. riding formations, d. communication skills, and e. post-ride check.	Practical Activity	160 min	A2-001 (p. 8-1)

## 5. Time

a.	Introduction/Conclusion:	10 min
b.	Interactive Lecture:	10 min
c.	Demonstration and Performance:	85 min
d.	Demonstration:	15 min
e.	Practical Activity:	160 min
f.	Total:	280 min

## 6. Substantiation

- An interactive lecture was chosen for TP 1 to introduce and give the cadet direction on the personal and group equipment required when biking.
- Demonstration and performance was chosen for TPs 2–5 as it allows the instructor to explain and demonstrate the procedures for the pre-ride check as well as proper mountain bike techniques while providing an opportunity for the cadet to practice each skill under supervision.
- Demonstration was chosen for TP 6 as it allows the instructor to explain and demonstrate the procedure for completing a post-ride check.
- A practical activity was chosen for TP 7 as it is an interactive way to introduce the cadet to mountain bike techniques and procedures. This activity contributes to the development of these skills and procedures through a fun and exciting familiarization ride.

## 7. References

- a. A2-001 A-CR-CCP-951/PT-002 D Cdts 3. (2006). *Royal Canadian Army Cadets Adventure Training Safety Standards*. Ottawa, ON: Department of National Defence.
- b. C2-083 (ISBN 0-07-149390-5) Brink, T. (2007). *The Complete Mountain Biking Manual*. Camden, ME: Ragged Mountain Press.
- c. C2-087 Badyk, M., Buck, K., Sahl, N., Schultz, R., & Vrooman, D. (1998). *Ontario Learn to Mountain Bike Clinic Workbook* (2<sup>nd</sup> ed.). Ontario Cycling Association and Ontario Recreational Mountain Bicycling Alliance.
- d. C2-088 (ISBN 1-55297-653-X) Crowther, N. (2002). *The Ultimate Mountain Bike Book: The Definitive Illustrated Guide to Bikes, Components, Techniques, Thrills and Trails*. Toronto, ON: Firefly Books Ltd.
- e. C2-089 Ministry of Transport Ontario. (2007). *Young Cyclists Guide*. Retrieved October 5, 2007, from <http://www.mto.gov.on.ca/english/safety/cycling/youngcyclist.htm>.
- f. C2-092 Ministry of Transport Ontario. (2007). *Cycling Skills: Cycling Safety for Teen and Adult Cyclists*. Retrieved October 5, 2007, from <http://www.mto.gov.on.ca/english/pubs/cycling/cyclingskills.htm>.

## 8. Training Aids

- a. Mountain bike,
- b. Helmet,
- c. Bell or horn,
- d. Light and reflectors,
- e. Map of area,
- f. Compass,
- g. Reflective vest,
- h. Water carrier,
- i. Bike tire pump,
- j. Bike maintenance tool,
- k. Lubricant,
- l. Hand brush,
- m. Cleaning cloth,
- n. Sponge,
- o. Small brush (toothbrush),
- p. Stiff brush,
- q. Dish soap,
- r. Bucket, and

- s. Pre- and post-ride checklist.

9. **Learning Aids**

- a. Mountain bike,
- b. Helmet,
- c. Bell or horn,
- d. Light and reflectors,
- e. Lubricant,
- f. Hand brush,
- g. Cleaning cloth,
- h. Sponge,
- i. Small brush (toothbrush),
- j. Stiff brush,
- k. Dish soap,
- l. Bucket, and
- m. Pre- and post-ride checklist.

10. **Test Details.** This EO is assessed IAW Chapter 3, [Annex B](#) (Assessment of Learning Plan – Basic Expedition), S251 PC.

11. **Remarks**

- a. IAW A-CR-CCP-951/PT-002, the following equipment is required for the familiarization ride:
  - (1) reflective vest (worn by the person in rear of group),
  - (2) map of area (if unfamiliar),
  - (3) compass,
  - (4) first aid kit,
  - (5) communication device, cellular phone or hand-held radio, and
  - (6) basic repair kit.
- b. This EO shall be conducted during the three-day expedition.

## **PO S251 (MOUNTAIN BIKE) PC ASSESSMENT INSTRUCTIONS**

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### **PREPARATION**

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#### **PRE-ASSESSMENT INSTRUCTIONS**

Review the assessment plan, assessment instructions and assessment checklist and become familiar with the material prior to conducting the assessment.

Obtain all resources required for the assessment.

#### **PRE-ASSESSMENT ASSIGNMENT**

Have the cadet review the assessment activity instructions and the assessment checklist to become familiar with the material prior to participating in the assessment.

#### **ASSESSMENT METHOD**

Performance assessment was chosen to observe the cadets perform the required skills and make a judgement on the quality of the performance.

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### **CONDUCT OF ASSESSMENT**

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#### **PURPOSE**

The purpose of this PC is to assess the cadet's ability to ride a mountain bike during an expedition.

#### **RESOURCES**

- PO S251 Assessment Checklist,
- Mountain bike, and
- Helmet.

#### **ASSESSMENT ACTIVITY LAYOUT**

The assessment will be conducted in the field during the five-day expedition on novice mountain bike trails IAW A-CR-CCP-951/PT-002 during daylight hours.

#### **ASSESSMENT ACTIVITY INSTRUCTIONS**



The cadets may be provided assistance (eg, reminders, guided questions).



After observing each task being performed, make a judgement and indicate (with a check mark in the applicable box) on the assessment checklist whether the task was:

- **Incomplete.** The task was not attempted or not completed even with assistance.
- **Completed With Difficulty.** The task was completed with some difficulty/assistance.
- **Completed Without Difficulty.** The task was completed without major difficulty/assistance.

Make notes of observations for the purposes of providing post-assessment descriptive feedback.



To ensure a safe environment, cadets shall be afforded only two safety-related warnings during the bike phase of the five-day expedition, on the third warning they shall be assessed as incomplete on the PO and a note shall be made in the feedback section. Warnings shall be issued for **significant** failure to adhere to the safety principles taught in the EO. When a warning is given, the instructor shall clearly identify what the cadet has done incorrectly, what steps they need to take to correct the error, and what action they should take in the future to avoid the error.

1. Have the cadet select and fit a mountain bike.
2. Have the cadet mount a mountain bike.
3. Tell the cadet to shift to a specific gear.
4. Detail a location for the cadet to stop a mountain bike by braking.
5. Have the cadet apply biking techniques to ascend a hill.
6. Have the cadet apply biking techniques to descend a hill.

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## POST-ASSESSMENT INSTRUCTIONS

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### RECORDING ASSESSMENT RESULTS

Indicate the overall performance assessment on the assessment checklist as:

- **Incomplete.** The cadet has not achieved the performance standard by not completing at least one of the required areas.
- **Completed With Difficulty.** The cadet has achieved the performance standard by completing one or more of the required objectives with difficulty.
- **Completed Without Difficulty.** The cadet has achieved the performance standard by completing all objectives without difficulty.

Record notes made in the assessor's feedback section of the assessment checklist.

Sign and date the assessment checklist. Indicate the level of performance on the Basic Expedition Qualification Record, located in [Annex C](#).

### PROVIDING ASSESSMENT FEEDBACK

Discuss the overall performance results with the cadet and provide them with a copy of the completed checklist.

**PO S251 (MOUNTAIN BIKE)  
PC ASSESSMENT CHECKLIST**

Cadet's Name: \_\_\_\_\_

Platoon: \_\_\_\_\_

**Analytical Performance Assessment:**

Ride a Mountain Bike During an Expedition	Assessment		
	Incomplete	Completed With Difficulty	Completed Without Difficulty
The cadet selected and fit a mountain bike.			
The cadet mounted a mountain bike using proper technique.			
The cadet dismounted a mountain bike using proper technique.			
The cadet correctly shifted to a gear selected by the evaluator.			
The cadet correctly applied front and rear braking, allowing them to stop at a point indicated by the evaluator.			
The cadet ascended a hill using proper technique.			
The cadet descended a hill using proper technique.			

**Assessor's Feedback:**

**Overall Performance Assessment:**

Overall (Check one)	PO Assessment					
	Incomplete		Completed With Difficulty		Completed Without Difficulty	
	The cadet has not achieved the performance standard by not completing at least one of the required skills.		The cadet has achieved the performance standard by completing one or more of the required objectives with difficulty.		The cadet has achieved the performance standard by completing all objectives without difficulty.	

Assessor's Name: \_\_\_\_\_

Position: \_\_\_\_\_

Assessor's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

*This form shall be reproduced locally.*



**SECTION 7**  
**PO S351 – REPAIR A MOUNTAIN BIKE**

1. **Performance.** Repair a Mountain Bike.
2. **Conditions**
  - a. Given:
    - (1) Mountain bike,
    - (2) Mountain bike repair kit,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Training area large enough to accommodate the entire group.
3. **Standard.** The cadet will perform basic mountain bike repairs, to include:
  - a. splitting and rejoining a chain;
  - b. adjusting a mechanical disc brake by:
    - (1) regulating the tension in the brake cable; and
    - (2) repositioning the stationary brake pad;
  - c. adjusting the rear and front derailleurs, to include:
    - (1) adjusting the high and low limit screws; and
    - (2) tensioning the gear cable; and
  - d. repairing a flat tire, in a group of three, by:
    - (1) removing the tire from the rim;
    - (2) patching or replacing the tube; and
    - (3) replacing the tire on the rim.
4. **Remarks.** The mountain bike repair kit will include:
  - a. spare tube,
  - b. tube patch kit,
  - c. tire levers,
  - d. bike multi-tool, to include:
    - (1) 2-, 2.5-, 3-, 4-, 5-, 6- and 8-mm hex keys,
    - (2) chain tool,
    - (3) flat-head screwdriver,

- (4) Phillips screwdriver,
  - (5) T-25 Torx spoke key,
  - (6) spoke wrenches, and
  - (7) 8- and 10-mm open wrenches; and
- e. mini pump with gauge.

**EO S351.01 – REPAIR A DAMAGED CHAIN**

1. **Performance.** Repair a Damaged Chain.

2. **Conditions**

a. Given:

- (1) Mountain bike,
- (2) Mountain bike repair kit,
- (3) Link of a chain,
- (4) Cleaning cloth,
- (5) Cassette scraper,
- (6) Chain-cleaning box,
- (7) Degreaser,
- (8) Lubricant,
- (9) Rubber gloves,
- (10) Large brush,
- (11) Small brush,
- (12) Bucket,
- (13) Water,
- (14) Soap,
- (15) Supervision, and
- (16) Assistance as required.

b. Denied: N/A.

c. Environmental: Outside training area large enough to accommodate the entire group, during daylight hours.

3. **Standard.** The cadet shall:

a. clean a chain; and

b. repair a chain by:

- (1) splitting as required; and
- (2) rejoining.

## 4. Teaching Points

TP	Description	Method	Time	Ref
TP1	Identify the parts of a mountain bike, to include: <ol style="list-style-type: none"> <li>handlebar,</li> <li>gear shifter,</li> <li>brake lever,</li> <li>top tube,</li> <li>tire,</li> <li>quick release,</li> <li>derailleur (front and rear),</li> <li>chainring,</li> <li>chainset,</li> <li>pedal,</li> <li>chain,</li> <li>chainstay,</li> <li>cogs,</li> <li>cassette,</li> <li>brakes,</li> <li>seat tube,</li> <li>seat post release,</li> <li>seat post, and</li> <li>saddle.</li> </ol>	Interactive Lecture	5 min	C2-082 (pp. 356–362) C2-084 (pp. 12–13, pp. 234–239) C2-088 (p. 18)
TP2	Identify the components of a mountain bike repair kit, to include: <ol style="list-style-type: none"> <li>spare tube,</li> <li>tube patch kit, to include:               <ol style="list-style-type: none"> <li>patches,</li> <li>glue, and</li> <li>sandpaper;</li> </ol> </li> <li>tire levers,</li> <li>bike multi-tool, to include:               <ol style="list-style-type: none"> <li>2-, 2.5-, 3-, 4-, 5-, 6- and 8-mm hex (Allen) keys,</li> <li>chain tool,</li> <li>flat-head screwdriver,</li> <li>Phillips screwdriver,</li> <li>T-25 Torx spoke key,</li> <li>spoke wrenches, and</li> </ol> </li> </ol>	Interactive Lecture	5 min	C2-082 (p. 7)

TP	Description	Method	Time	Ref
	(7) 8- and 10-mm open wrenches; and e. mini pump with gauge.			
TP3	Identify the parts of a link in a mountain bike chain, to include: a. side plates, b. rollers, and c. rivets.	Interactive Lecture	5 min	C2-082 (p. 164) C2-084 (p. 94)
TP4	Discuss why chains break, to include: a. wear and tear, b. dirt, and c. improper maintenance.	Interactive Lecture	5 min	C2-082 (pp. 166–168) C2-083 (p. 78) C2-084 (p. 102)
TP5	Explain, demonstrate and have the cadet clean a chain, to include: a. dipping a small brush into degreaser; b. scrubbing the rear cassette and the front chainring with the brush soaked in degreaser; c. pouring degreaser into the reservoir of the chain-cleaning box; d. snapping the chain-cleaning box over the lower portion of the chain; e. turning the pedal so it moves slowly backwards and moves the chain through the chain-cleaning box completely at least three times; f. unclipping the chain-cleaning box; g. scraping and brushing the grease and gunk out of the rear cassette and front chainring using the cassette scraper and large and small brushes; h. washing the rear cassette, front chainrings, chain and jockey wheels with warm, soapy water; i. rinsing the rear cassette, front chainrings, chain and jockey wheels with clean water; j. drying the rear cassette, front chainrings, chain and jockey wheels with a clean cloth; and k. lubricating the chain by placing a small drop of lubricant on each roller.	Demonstration and Performance	20 min	C2-082 (pp. 170–171) C2-083 (pp. 72–73) C2-084 (pp. 95–96) C2-088 (pp. 44–45)

TP	Description	Method	Time	Ref
TP6	<p>Explain, demonstrate and have the cadet:</p> <p>a. split the chain, to include:</p> <ol style="list-style-type: none"> <li>(1) locating the link which has to be removed;</li> <li>(2) laying the chain on the chain tool, so it sits in the furthest away position;</li> <li>(3) turning the handle of the chain tool clockwise until the pin lines up with the centre of the chain rivet;</li> <li>(4) continuing to rotate the chain tool handle, pushing the rivet until it rests on the far outer plate;</li> <li>(5) taking the chain off the chain tool;</li> <li>(6) flexing the chain to free the inner segment from the rivet;</li> <li>(7) separating the chain; and</li> <li>(8) repeating the process two rivets down in order to remove one complete link; and</li> </ol> <p>b. rejoin the chain, to include:</p> <ol style="list-style-type: none"> <li>(1) turning the chain so that the rivet at the wide end faces towards the body of the individual completing the repair;</li> <li>(2) feeding the chain through the drive shaft, placing the chain on the smallest sprocket on the rear cassette and dropping it into the gap between the chainset and the frame at the front to give enough slack to rejoin the chain;</li> <li>(3) easing the two ends of the chain together by flexing the chain so that the inner segment can slide past the stub of the rivet sticking through to the inside of the outer plate;</li> <li>(4) laying the chain on the chain tool so it sits in the furthest away position;</li> <li>(5) turning the handle of the chain tool clockwise, pushing the rivet into the chain until there is an even amount of rivet showing on both sides of the chain;</li> <li>(6) removing the tool by turning the handle counter-clockwise;</li> </ol>	Demonstration and Performance	30 min	C2-084 (pp. 32–33)

TP	Description	Method	Time	Ref
	(7) bending the chain to ensure the link is not stiff; and			
	(8) replacing the chain onto the chainring.			

#### 5. Time

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction/Conclusion:       | 10 min |
| b. | Interactive Lecture:           | 20 min |
| c. | Demonstration and Performance: | 50 min |
| d. | Total:                         | 80 min |

#### 6. Substantiation

- An interactive lecture was chosen for TPs 1–4 to orient the cadet to components of a mountain bike repair kit and introduce them to the components of a chain and the reasons that they break.
- A demonstration and performance was chosen for TPs 5 and 6 as it allows the instructor to explain and demonstrate cleaning, splitting and rejoining a chain while providing the cadet the opportunity to practice these skills under supervision.

#### 7. References

- C2-082 (ISBN 1-57954-883-0) Downs, T. (2005). *Bicycle Maintenance & Repair for Road & Mountain Bikes*. USA: Rodale Inc.
- C2-083 (ISBN 978-0-07-149390-1) Brink, T. (2007). *The Complete Mountain Biking Manual*. Camden, ME: Ragged Mountain Press.
- C2-084 (ISBN 1-55297-734-X) Allwood, M. (2004). *Mountain Bike Maintenance: The Illustrated Manual*. Richmond Hill, ON: Firefly Books Ltd.
- C2-088 (ISBN 1-55297-653-X) Crowther, N. (2002). *The Ultimate Mountain Bike Book: The Definitive Illustrated Guide to Bikes, Components, Techniques, Thrills and Trails*. Toronto, ON: Firefly Books Ltd.

#### 8. Training Aids

- Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,
- Mountain bike,
- Mountain bike repair kit,
- Mountain bike repair aide-mémoire card,
- Bike stand,
- Cleaning cloth,
- Lubricant,
- Chain-cleaning box,
- De-greaser,

- j. Cassette scraper,
- k. Rubber gloves,
- l. Large brush,
- m. Small brush,
- n. Bucket,
- o. Water, and
- p. Soap.

9. **Learning Aids**

- a. Mountain bike,
- b. Mountain bike repair kit,
- c. Mountain bike repair aide-mémoire card,
- d. Cleaning cloth,
- e. Lubricant,
- f. Chain-cleaning box,
- g. De-greaser,
- h. Cassette scraper,
- i. Rubber gloves,
- j. Large brush,
- k. Small brush,
- l. Bucket,
- m. Water, and
- n. Soap.

10. **Test Details.** This lesson is assessed IAW S351 PC (Chapter 3, [Annex B](#), [Appendix 4](#)).

11. **Remarks.** N/A.



**EO S351.02 – ADJUST BRAKES**

1. **Performance.** Adjust Brakes.
2. **Conditions**
  - a. Given:
    - (1) Mountain bike,
    - (2) Bike multi-tool,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Outside training area large enough to accommodate the entire group, during daylight hours.
3. **Standard.** The cadet shall adjust a mechanical disc brake by:
  - a. regulating the tension in the brake cable; and
  - b. repositioning the stationary brake pad.
4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Identify the components of a V-brake system, to include: <ol style="list-style-type: none"> <li>a. brake lever, to include:               <ol style="list-style-type: none"> <li>(1) barrel-adjuster, and</li> <li>(2) lockring;</li> </ol> </li> <li>b. brake cable,</li> <li>c. V-brake, to include:               <ol style="list-style-type: none"> <li>(1) noodle,</li> <li>(2) hanger,</li> <li>(3) gaiter,</li> <li>(4) cable clamp bolt,</li> <li>(5) brake units (arms),</li> <li>(6) brake blocks (pads),</li> <li>(7) brake block (pad) adjusting unit, and</li> <li>(8) balance screw; and</li> </ol> </li> <li>d. tire rim.</li> </ol>	Interactive Lecture	5 min	C2-084 (pp. 50–57) C2-088 (pp. 50–51)

TP	Description	Method	Time	Ref
TP2	<p>Explain and demonstrate how the components of a V-brake system work together to slow down/stop the mountain bike:</p> <ol style="list-style-type: none"> <li>The mountain biker pulls the brake lever.</li> <li>The pulling of the brake lever tensions the brake cable.</li> <li>The tensioning of the brake cable pivots the brake units.</li> <li>The pivoting brake units push the brake blocks onto the tire rim.</li> <li>The pushing brake blocks slow down/stop the mountain bike by applying pressure and thereby causing friction between the tire rim and the brake block.</li> </ol>	Demonstration	5 min	C2-088 (pp. 50–51)
TP3	<p>Explain and demonstrate adjusting a V-brake, to include:</p> <ol style="list-style-type: none"> <li>repositioning the brake block(s);</li> <li>regulating the right and left brake blocks using the balance screws; and</li> <li>regulating tension in the brake cable using the: <ol style="list-style-type: none"> <li>barrel-adjusters, and/or</li> <li>cable clamp bolt.</li> </ol> </li> </ol>	Demonstration	10 min	C2-084 (pp. 52–55, p. 57)
TP4	<p>Identify the components of a mechanical disc brake system, to include:</p> <ol style="list-style-type: none"> <li>brake lever, to include: <ol style="list-style-type: none"> <li>barrel-adjuster, and</li> <li>locking;</li> </ol> </li> <li>brake cable,</li> <li>caliper, to include: <ol style="list-style-type: none"> <li>barrel-adjuster,</li> <li>locking,</li> <li>cable clamp bolt, and</li> <li>actuation lever; and</li> </ol> </li> <li>rotor.</li> </ol>	Interactive Lecture	5 min	C2-084 (pp. 68–77)
TP5	<p>Explain and demonstrate how the components of a mechanical disc brake system work together to slow down/stop a mountain bike:</p> <ol style="list-style-type: none"> <li>The mountain biker pulls the brake lever.</li> </ol>	Demonstration	10 min	C2-084 (pp. 68–77)

TP	Description	Method	Time	Ref
	<ul style="list-style-type: none"> <li>b. The pulling of the brake lever tensions the brake cable.</li> <li>c. The tensioning of the brake cable pulls the actuation lever.</li> <li>d. The pulling of the actuation lever twists the piston inside the caliper.</li> <li>e. The twisting of the piston inside the caliper pushes the outer brake pad towards the rotor.</li> <li>f. The pushing of the outer brake pad on the rotor bends the rotor slightly so that it in turn is pushed against the inner (stationary) brake pad.</li> <li>g. The pushing of both the outer and inner (stationary) brake pads traps the rotor and thereby stops/slows down the mountain bike.</li> <li>h. The mountain biker releases the brake lever.</li> </ul>			
TP6	<p>Explain, demonstrate and have the cadet adjust a mechanical disc brake, to include:</p> <ul style="list-style-type: none"> <li>a. regulating the tension in the brake cable using: <ul style="list-style-type: none"> <li>(1) the barrel-adjusters, and/or</li> <li>(2) the cable clamp bolt; and</li> </ul> </li> <li>b. repositioning the inner (stationary) brake pad.</li> </ul>	Demonstration and Performance	35 min	C2-084 (pp. 78–79)

#### 5. Time

- |                                   |        |
|-----------------------------------|--------|
| a. Introduction:                  | 10 min |
| b. Interactive Lecture:           | 10 min |
| c. Demonstration:                 | 25 min |
| d. Demonstration and Performance: | 35 min |
| e. Total:                         | 80 min |

#### 6. Substantiation

- a. An interactive lecture was chosen for TPs 1 and 4 to familiarize cadets with the components of the V-brake and the mechanical disc brake system.
- b. A demonstration was chosen for TPs 2, 3 and 5 as it allows the instructor to explain and demonstrate to the cadets how the components of the mechanical disc brake and V-brake system work to slow down/stop a mountain bike and how to adjust a V-brake system.

- c. A demonstration and performance was chosen for TP 6 as it allows the instructor to explain and demonstrate adjusting a mechanical disc brake while providing an opportunity for the cadet to practice the skill under supervision.

**7. References**

- a. C2-084 (ISBN 1-55297-734-X) Allwood, M. (2004). *Mountain Bike Maintenance: The Illustrated Manual*. Richmond Hill, ON: Firefly Books Ltd.
- b. C2-088 (ISBN 1-55297-653-X) Crowther, N. (2002). *The Ultimate Mountain Bike Book: The Definitive Illustrated Guide to Bikes, Components, Techniques, Thrills and Trails*. Toronto, ON: Firefly Books Ltd.

**8. Training Aids**

- a. Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,
- b. Mountain bike equipped with a mechanical disc brake system,
- c. Mountain bike equipped with a V-brake disc system,
- d. Bike multi-tool, and
- e. Bike stand.

**9. Learning Aids**

- a. Mountain bike equipped with a mechanical disc brake system,
- b. Bike multi-tool, and
- c. Bike stand.

**10. Test Details.** This lesson is assessed IAW S351 PC (Chapter 3, [Annex B](#), [Appendix 4](#)).

**11. Remarks.** Cadets will be required to complete adjustments on a mechanical disc brake system. If that type of brake system is unavailable, more focus should be spent during the lesson on the adjustment of the V-brake system.

**EO S351.03 – ADJUST DERAILLEURS**

1. **Performance.** Adjust Derailleurs.
2. **Conditions**
  - a. Given:
    - (1) Mountain bike,
    - (2) Mountain bike repair kit,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Outside training area large enough to accommodate the entire group, during daylight hours.
3. **Standard.** The cadet shall adjust rear and front derailleurs by:
  - a. adjusting the high and low limit screws; and
  - b. tensioning the gear cable.
4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Identify the components of the front and rear derailleur systems, to include: <ol style="list-style-type: none"> <li>a. gear shifter,</li> <li>b. gear cable and casing,</li> <li>c. cable clamp bolt,</li> <li>d. barrel-adjuster,</li> <li>e. limit screws,</li> <li>f. chainring,</li> <li>g. cog,</li> <li>h. front derailleur, to include front derailleur cage, and</li> <li>i. rear derailleur, to include:               <ol style="list-style-type: none"> <li>(1) rear derailleur cage,</li> <li>(2) guide jockey wheel, and</li> <li>(3) tension jockey wheel.</li> </ol> </li> </ol>	Interactive Lecture	10 min	C2-082 (p. 194–221) C2-084 (p. 108–112, pp. 115–119) C2-223 C2-224
TP2	Explain and demonstrate how the components of the front and rear derailleur systems operate to change the gears on a mountain bike.	Demonstration	10 min	C2-084 (pp. 108–112, pp. 115–119)

TP	Description	Method	Time	Ref
TP3	<p>Explain, demonstrate and have the cadet adjust the front and rear derailleur, to include:</p> <p>a. adjusting the high and low limit screws on the:</p> <p>(1) front derailleur, and</p> <p>(2) rear derailleur; and</p> <p>b. tensioning the gear cable on the:</p> <p>(1) front derailleur, and</p> <p>(2) rear derailleur.</p>	Demonstration and Performance	50 min	<p>C2-082 (pp. 194–221)</p> <p>C2-083 (p. 81)</p> <p>C2-084 (pp. 108–109, pp. 115–119)</p> <p>C2-223</p> <p>C2-224</p>

## 5. Time

a.	Introduction:	10 min
b.	Interactive Lecture:	10 min
c.	Demonstration:	10 min
d.	Demonstration and Performance:	50 min
e.	Total:	80 min

## 6. Substantiation

- An interactive lecture was chosen for TP 1 to familiarize the cadet with the components of the front and rear derailleur systems.
- A demonstration was chosen for TP 2 as it allows the instructor to explain and demonstrate to the cadet how the components of the front and rear derailleur work to change the gears on a mountain bike.
- A demonstration and performance was chosen for TP 3 as it allows the instructor to explain and demonstrate adjusting the front and rear derailleur while providing an opportunity for the cadet to practice both skills under supervision.

## 7. References

- C2-082 (ISBN 1-57954-883-0) Downs, T. (2005). *Bicycle Maintenance & Repair for Road & Mountain Bikes*. USA: Rodale Inc.
- C2-083 (ISBN 978-0-07-149390-1) Brink, T. (2007). *The Complete Mountain Biking Manual*. Camden, ME: Ragged Mountain Press.
- C2-084 (ISBN 1-55297-734-X) Allwood, M. (2004). *Mountain Bike Maintenance: The Illustrated Manual*. Richmond Hill, ON: Firefly Books Ltd.
- C2-223 Park Tool. (2008). *Repair How-To's: Front Derailleur Adjustment*. Retrieved November 30, 2008, from <http://www.parktool.com/repair/readhowto.asp?id=75>.
- C2-224 Park Tool. (2008). *Repair How-To's: Rear Derailleur Adjustment*. Retrieved November 30, 2008, from <http://www.parktool.com/repair/readhowto.asp?id=64>.

## 8. Training Aids

- Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,

- b. Mountain bike,
- c. Mountain bike repair kit, and
- d. Bike stand.

9. **Learning Aids**

- a. Mountain bike, and
- b. Mountain bike repair kit.

10. **Test Details.** This lesson is assessed IAW S351 PC (Chapter 3, [Annex B](#), [Appendix 4](#)).

11. **Remarks.** N/A.

**EO S351.04 – REPAIR A FLAT TIRE**

1. **Performance.** Repair a Flat Tire.
2. **Conditions**
  - a. Given:
    - (1) Mountain bike,
    - (2) Mountain bike repair kit,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Outside training area large enough to accommodate the entire group, during daylight hours.
3. **Standard.** The cadet, in a group of three, shall repair a flat tire by:
  - a. removing the tire from the rim;
  - b. patching or replacing the tube; and
  - c. replacing the tire on the rim.
4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Identify the parts of a wheel, to include: <ol style="list-style-type: none"> <li>a. tire,</li> <li>b. tire bead,</li> <li>c. inner tube,</li> <li>d. rim,</li> <li>e. rim strip,</li> <li>f. rim edge,</li> <li>g. spoke nipple,</li> <li>h. spoke,</li> <li>i. valve, and</li> <li>j. valve hole.</li> </ol>	Interactive Lecture	10 min	C2-082 (p. 48, p. 58)
TP2	Explain, demonstrate and have the cadets, in groups of three, repair a flat tire, to include: <ol style="list-style-type: none"> <li>a. releasing the brake cable by:               <ol style="list-style-type: none"> <li>(1) squeezing the brake units together;</li> <li>(2) pulling the noodle gently but firmly away from the cable clamp bolt;</li> </ol> </li> </ol>	Demonstration and Performance	60 min	C2-082 (pp. 56–60) C2-084 (pp. 26–29) C2-088 (pp. 48–51)



TP	Description	Method	Time	Ref
	<ul style="list-style-type: none"> <li>(3) releasing the noodle from the hanger; and</li> <li>(4) lifting the noodle up and away, allowing the brake units to fall to either side;</li> <li>b. removing:               <ul style="list-style-type: none"> <li>(1) the front wheel, and/or</li> <li>(2) the rear wheel;</li> </ul> </li> <li>c. expelling the air from the inner tube by standing the wheel upright on the ground, pushing down and massaging the air out;</li> <li>d. levering the tire from the rim by:               <ul style="list-style-type: none"> <li>(1) pinching the tire all the way around to help loosen it from the rim;</li> <li>(2) inserting the tire lever between the rim edge and the tire bead in line with a spoke;</li> <li>(3) flipping one side of the tire bead onto the outside of the rim edge;</li> <li>(4) clipping the tire lever onto the spoke using the hook on the opposite end to lock it into place; and</li> <li>(5) repeating Steps 2–4 every two spokes until one of the tire beads is completely free from the rim;</li> </ul> </li> <li>e. pulling the inner tube out of the tire;</li> <li>f. locating the source of the hole in the tire by running a cloth around the inside of the tire, feeling for a sharp object protruding into the tire;</li> <li>g. removing the sharp object from the tire, if required;</li> <li>h. locating the puncture in the inner tube by:               <ul style="list-style-type: none"> <li>(1) pumping the inner tube to medium pressure;</li> <li>(2) squeezing the inner tube gently and passing it slowly over an individual's wrist/lips/ear to feel for where the air is escaping;</li> <li>(3) placing the inner tube in water to look for bubbles; and</li> <li>(4) marking the puncture location with a pen;</li> </ul> </li> <li>i. patching the puncture in the inner tube by:</li> </ul>			

TP	Description	Method	Time	Ref
	<ul style="list-style-type: none"> <li>(1) selecting/cutting a patch into a circle that is 1 cm (1/2 inch) larger than the puncture;</li> <li>(2) roughing up the area around the puncture with sandpaper;</li> <li>(3) brushing away rubber dust;</li> <li>(4) applying adhesive to the area around the puncture;</li> <li>(5) allowing the adhesive to begin to dry until it loses its sheen;</li> <li>(6) placing the patch firmly on the inner tube;</li> <li>(7) allowing the patch to completely dry (approximately 5 min); and</li> <li>(8) pumping the inner tube to medium pressure to check for any further leakages;</li> </ul>			
	<p>j. installing the patched/new inner tube, to include:</p> <ul style="list-style-type: none"> <li>(1) pumping the inner tube with just enough air to give it shape;</li> <li>(2) pulling back the section of the tire over the valve hole;</li> <li>(3) popping the valve through the valve hole; and</li> <li>(4) starting at the valve stem, working the inner tube into the tire so it is completely tucked in;</li> </ul>			
	<p>k. placing the tire back onto the rim by:</p> <ul style="list-style-type: none"> <li>(1) holding the wheel on the individual's lap;</li> <li>(2) placing the hands on either side of the valve stem with the fingers over the back and the thumbs in the front;</li> <li>(3) working the hands away from each other to pop the tire bead onto the rim by pushing the tire with the thumbs/heels of the hand; and</li> <li>(4) working both sides of the tire bead from side to side to make sure that the tube is not caught under the tire bead;</li> </ul>			
	<p>l. inflating the tire to 35–65 psi;</p>			
	<p>m. replacing:</p>			

TP	Description	Method	Time	Ref
	(1) the front wheel, and/or (2) the rear wheel; and n. reattaching the brake cable by: (1) squeezing the brake units firmly together; and (2) easing the end of the noodle back onto the hanger.			

#### 5. Time

a.	Introduction:	10 min
b.	Interactive Lecture:	10 min
c.	Demonstration and Performance:	60 min
d.	Total:	80 min

#### 6. Substantiation

- a. An interactive lecture was chosen for TP 1 to introduce the cadet to the parts of a wheel.
- b. A demonstration and performance was chosen for TP 2 as it allows the instructor to explain and demonstrate repairing a flat tire while providing an opportunity for the cadet to practice the skill under supervision.

#### 7. References

- a. C2-082 (ISBN 1-57954-883-0) Downs, T. (2005). *Bicycle Maintenance & Repair for Road & Mountain Bikes*. USA: Rodale Inc.
- b. C2-084 (ISBN 1-55297-734-X) Allwood, M. (2004). *Mountain Bike Maintenance: The Illustrated Manual*. Richmond Hill, ON: Firefly Books Ltd.
- c. C2-088 (ISBN 1-55297-653-X) Crowther, N. (2002). *The Ultimate Mountain Bike Book: The Definitive Illustrated Guide to Bikes, Components, Techniques, Thrills and Trails*. Toronto, ON: Firefly Books Ltd.

#### 8. Training Aids

- a. Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,
- b. Mountain bike,
- c. Mountain bike repair kit, and
- d. Bike stand.

#### 9. Learning Aids

- a. Mountain bike, and
- b. Mountain bike repair kit.

10. **Test Details.** This lesson is assessed IAW S351 PC (Chapter 3, [Annex B](#), [Appendix 4](#)).

11. **Remarks.** N/A.

## **S351 PC – ASSESSMENT INSTRUCTIONS**

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### **PREPARATION**

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#### **PRE-ASSESSMENT INSTRUCTIONS**

Review the assessment plan, assessment instructions and S351 PC Assessment Checklist and become familiar with the material prior to conducting the assessment.

Photocopy the S351 PC Assessment Checklist.

Obtain all resources required for the assessment.

#### **PRE-ASSESSMENT ASSIGNMENT**

Have the cadet review the assessment activity instructions and the S351 Assessment Checklist to become familiar with the material prior to participating in the assessment.

#### **ASSESSMENT METHOD**

Performance assessment was chosen to observe the cadets perform the required skills to repair a mountain bike and make a judgment on the quality of the performance.

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### **CONDUCT OF ASSESSMENT**

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#### **PURPOSE**

The purpose of this PC is to assess the cadet's ability to repair a mountain bike.

#### **RESOURCES**

- S351 PC Assessment Checklist,
- Fully equipped mountain bike,
- Mountain bike repair kit,
- Mountain bike repair aide-mémoire card,
- Cleaning cloth,
- Cassette scraper,
- Chain-cleaning box,
- Degreaser,
- Lubricant,
- Rubber gloves,
- Large brush,
- Small brush,
- Bucket,
- Water, and
- Soap.

## ASSESSMENT ACTIVITY LAYOUT

This assessment will be conducted:

- during EO S351.01 (Repair a Damaged Chain, Chapter 4, Section 7),
- during EO S351.02 (Adjust Brakes, Chapter 4, Section 7),
- during EO S351.03 (Adjust Derailleurs, Chapter 4, Section 7),
- during EO S351.04 (Repair a Flat Tire, Chapter 4, Section 7), and
- when mountain biking on trails IAW A-CR-CCP-951/PT-002 during daylight hours.

## ASSESSMENT ACTIVITY INSTRUCTIONS



The cadet may be provided assistance (eg, reminders, guided questions).



The cadet may use the mountain bike repair aide-mémoire card located in EO S351.01 (Repair a Damaged Chain, Chapter 4, Section 7), throughout this assessment.



After observing each skill being performed, make a judgment and indicate (with a check mark in the applicable box) on the Assessment Checklist whether the skill was:

- **Incomplete.** The skill was not attempted or not completed even with assistance;
- **Completed With Difficulty.** The skill was completed with some difficulty/assistance;
- **Completed Without Difficulty.** The skill was completed without difficulty/assistance; or
- **Exceeded Standard.** The skill was completed with enhanced proficiency, in a quick manner, without error, without assistance from the aide-mémoire card and without difficulty.

Make notes of observations for the purposes of providing descriptive post-assessment feedback.

1. Have the cadet repair a mountain bike.
2. Assess the cadet's performance for each skill and record the results on the Assessment Checklist. This assessment is very subjective. The feedback section of each assessment should be used to provide assessment details to the cadet.
3. There will be many opportunities for the cadets to complete these skills. Cadets may be given unlimited re-tests within the resources of the CSTC to meet the standard for each skill. Where time permits, cadets may re-test to improve their results.

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## POST ASSESSMENT INSTRUCTIONS

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### RECORDING ASSESSMENT RESULTS

1. Indicate the overall performance assessment on the Assessment Checklist as:
  - a. **Incomplete.** The cadet has not achieved the performance standard by not completing at least one of the required skills;
  - b. **Completed With Difficulty.** The cadet has achieved the performance standard by completing one or more of the required objectives with difficulty;
  - c. **Completed Without Difficulty.** The cadet has achieved the performance standard by completing all objectives without difficulty; or
  - d. **Exceeded Standard.** The cadet has exceeded the performance standard by exceeding the standard on all objectives.
2. Record notes made in the assessor's feedback section of the Assessment Checklist.
3. Sign and date the Assessment Checklist.
4. Ensure a copy of the Assessment Checklist is attached to the cadet's training file.
5. The overall result will be recorded on the Expedition Instructor Qualification Record located at [Annex C](#).

### PROVIDING ASSESSMENT FEEDBACK

Discuss the overall performance results with the cadet and provide them with a copy of the completed Assessment Checklist.

**Analytical Performance Assessment:**

Chain Repair	Incomplete	Completed
Split a chain.		
Rejoin a chain.		

**Assessor's Feedback:**

Check One	Incomplete	Completed With Difficulty	Completed Without Difficulty	Exceeded Standard
<b>Overall Performance</b>	The cadet did not repair a chain or did not attempt, even with assistance.	The cadet repaired a chain with some difficulty/assistance.	The cadet repaired a chain, without difficulty/assistance.	The cadet repaired a chain in a timely manner, without error, without assistance from the aide-mémoire card and without difficulty.

*This form shall be reproduced locally.*

Adjust a Mechanical Disc Brake	Incomplete	Completed
Check/regulate the tension in the brake cable using the barrel-adjusters.		
Check/regulate the tension in the brake cable using the cable clamp bolt.		
Check/reposition the inner (stationary) pad.		

**Assessor's Feedback:**

Check One	Incomplete	Completed With Difficulty	Completed Without Difficulty	Exceeded Standard
<b>Overall Performance</b>	The cadet did not adjust a mechanical disc brake or did not attempt, even with assistance.	The cadet adjusted a mechanical disc brake with some difficulty/assistance.	The cadet adjusted a mechanical disc brake without difficulty/assistance.	The cadet adjusted a mechanical disc brake in a timely manner, without error, without assistance from the aide-mémoire card and without difficulty.

*This form shall be reproduced locally.*



Adjust Derailleurs	Incomplete	Completed
Check/adjust the high and low limit screws.		
Check/tension the gear cable.		

**Assessor's Feedback:**

Check One	Incomplete	Completed With Difficulty	Completed Without Difficulty	Exceeded Standard
<b>Overall Performance</b>	The cadet did not adjust derailleurs or did not attempt, even with assistance.	The cadet adjusted derailleurs, with some difficulty/assistance.	The cadet adjusted derailleurs, without difficulty/assistance.	The cadet adjusted derailleurs in a timely manner, without error, without assistance from the aide-mémoire card and without difficulty.

*This form shall be reproduced locally.*

Repair a Flat Tire	Incomplete	Completed
Remove the tire from the rim.		
Patch or replace the tube.		
Replace the tire on the rim.		

**Assessor's Feedback:**

Check One	Incomplete	Completed With Difficulty	Completed Without Difficulty	Exceeded Standard
<b>Overall Performance</b>	The cadet did not repair a flat tire or did not attempt, even with assistance.	The cadet repaired a flat tire with some difficulty/assistance.	The cadet repaired a flat tire without difficulty/assistance.	The cadet repaired a flat tire in a timely manner, without error, without assistance from the aide-mémoire card and without difficulty.

*This form shall be reproduced locally.*

**Assessor's Overall Feedback:**

**Overall Performance Assessment:**

PO S351 Overall Assessment							
Check One	Incomplete		Completed With Difficulty		Completed Without Difficulty		Exceeded Standard
<b>Overall Performance</b>	The cadet has not achieved the performance standard by not completing at least one of the required skills.		The cadet has achieved the performance standard by completing one or more of the required objectives with difficulty.		The cadet has achieved the performance standard by completing all objectives without difficulty.		The cadet has achieved the performance standard by exceeding the standard on all objectives.

<b>Assessor's Name:</b>	<b>Position:</b>
<b>Assessor's Signature:</b>	<b>Date:</b>

*This form shall be reproduced locally.*

**SECTION 8****PO S352 – RIDE A MOUNTAIN BIKE ON INTERMEDIATE TRAILS**

1. **Performance.** Ride a Mountain Bike on Intermediate Trails.
2. **Conditions**
  - a. Given:
    - (1) Fully equipped mountain bike,
    - (2) Helmet,
    - (3) Whistle,
    - (4) Supervision, and
    - (5) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Intermediate mountain bike trails IAW A-CR-CCP-951/PT-002 during daylight hours.
3. **Standard.** The cadet will ride a mountain bike on intermediate trails, performing a minimum of three of the following advanced mountain bike skills:
  - a. log hops,
  - b. wheelies,
  - c. bunny hops,
  - d. track stands, and
  - e. cornering.
4. **Remarks.** IAW A-CR-CCP-951/PT-002:
  - a. a fully equipped mountain bike is described as having the following:
    - (1) bell or horn,
    - (2) lights, and
    - (3) reflectors; and
  - b. the following group equipment is required when riding a mountain bike:
    - (1) reflective vest (worn by person in rear of group),
    - (2) topographical/trail map of area as required,
    - (3) compass,
    - (4) first aid kit,
    - (5) communication device (eg, cellular phone or hand-held radio),
    - (6) global positioning system receiver, and

- (7) mountain bike repair kit, to include:
  - (a) spare tube,
  - (b) tube patch kit,
  - (c) tire levers,
  - (d) bike multi-tool, to include:
    - i. 2-, 2.5-, 3-, 4-, 5-, 6- and 8-mm hex keys,
    - ii. chain tool,
    - iii. flat screwdriver,
    - iv. Phillips screwdriver,
    - v. T-25 Torx spoke key,
    - vi. spoke wrenches, and
    - vii. 8- and 10-mm open wrenches; and
  - (e) mini pump with gauge.
- c. Ensure that cadets are wearing a day pack and have an ample amount of water when mountain biking.
- d. Cadets who have previously completed mountain biking training by completing Basic Expedition qualification, PO S251 (Ride a Mountain Bike During an Expedition, A-CR-CCP-715/PG-001, Chapter 4, Section 6) and/or Silver Star qualification, EO M326.02B (Ride a Mountain Bike, A-CR-CCP-703/PG-001, Chapter 4, Section 18), may have their skill level assessed prior to the scheduled mountain biking training. Where these cadets demonstrate efficient skills, they may be exempt from EO S352.01 (Practice Mountain Bike Skills) and given more time for practicing mountain biking skills on familiarization trails.

**EO S352.01 – PRACTICE MOUNTAIN BIKE SKILLS**

1. **Performance.** Practice Mountain Bike Skills.
2. **Conditions**
  - a. Given:
    - (1) Fully equipped mountain bike,
    - (2) Helmet,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Familiarization mountain bike trails IAW A-CR-CCP-951/PT-002 during daylight hours.
3. **Standard.** The cadet shall practice mountain bike skills, to include:
  - a. selecting and adjusting a helmet;
  - b. selecting and adjusting a mountain bike;
  - c. adhering to safety precautions when mountain biking; and
  - d. demonstrating mountain bike skills, to include:
    - (1) braking;
    - (2) shifting gears;
    - (3) ascending hills; and
    - (4) descending hills.
4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Explain, demonstrate and have the cadet select and adjust a mountain bike by: <ol style="list-style-type: none"> <li>a. selecting a helmet;</li> <li>b. adjusting the helmet; and</li> <li>c. selecting a mountain bike by:               <ol style="list-style-type: none"> <li>(1) sizing by eye;</li> <li>(2) completing the stand-over test; and</li> <li>(3) adjusting the saddle.</li> </ol> </li> </ol>	Demonstration and Performance	15 min	C2-088 (pp. 22–23, p. 32) C2-089
TP2	Explain, demonstrate and have the cadet practice the procedure for completing a pre-ride bike check using the ABC Quick Check method, to include:	Demonstration and Performance	10 min	C2-088 (pp. 22–23, p. 32) C2-089

TP	Description	Method	Time	Ref
	a. air, to include: <ol style="list-style-type: none"> <li>(1) tire pressure, and</li> <li>(2) wear on the tread or cuts on side walls;</li> </ol> b. brakes, to include: <ol style="list-style-type: none"> <li>(1) brake levers, and</li> <li>(2) brake function;</li> </ol> c. chain and crank, to include: <ol style="list-style-type: none"> <li>(1) lubrication, and</li> <li>(2) pedals;</li> </ol> d. quick release, to include: <ol style="list-style-type: none"> <li>(1) wheel, and</li> <li>(2) saddle; and</li> </ol> e. final check.			
TP3	Explain and demonstrate safety precautions that must be adhered to when mountain biking, to include: <ol style="list-style-type: none"> <li>a. the rules of the road for bikers;</li> <li>b. signalling, to include:               <ol style="list-style-type: none"> <li>(1) left,</li> <li>(2) right, and</li> <li>(3) stop; and</li> </ol> </li> <li>c. riding discipline, to include:               <ol style="list-style-type: none"> <li>(1) formations for riding,</li> <li>(2) spacing,</li> <li>(3) stopping/starting procedures, and</li> <li>(4) road crossing.</li> </ol> </li> </ol>	Demonstration	5 min	A2-001 (pp. 8-1 to 8-3) C2-089 C2-090
TP4	Explain, demonstrate and have the cadet practice mountain bike skills, to include: <ol style="list-style-type: none"> <li>a. braking;</li> <li>b. shifting gears;</li> <li>c. ascending hills; and</li> <li>d. descending hills.</li> </ol>	Demonstration and Performance	30 min	C2-087 (p. 40, p. 42) C2-088 (p. 104–113) C2-092
TP5	Have the cadet practice mountain bike skills.	Practical Activity	45 min	
TP6	Explain, demonstrate and have the cadet complete a post-ride check, to include: <ol style="list-style-type: none"> <li>a. cleaning; and</li> </ol>	Demonstration and Performance	5 min	C2-088 (pp. 44–45, pp. 52–53)

TP	Description	Method	Time	Ref
	b. assessing for repairs.			

## 5. Time

a.	Introduction/Conclusion:	10 min
b.	Demonstration and Performance:	60 min
c.	Demonstration:	5 min
d.	Practical Activity:	45 min
e.	Total:	120 min

## 6. Substantiation

- A demonstration and performance was chosen for TPs 1, 2, 4 and 6 as it allows the instructor to explain and demonstrate selecting and adjusting a mountain bike, the procedure for a pre-ride and post-ride check, and proper mountain biking skills while providing an opportunity for the cadet to practice each skill under supervision.
- A demonstration was chosen for TP 3 as it allows the instructor to explain and demonstrate safety precautions when mountain biking.
- A practical activity was chosen for TP 5 as it is an interactive way to introduce the cadet to mountain bike skills and procedures in a controlled environment in a fun and exciting manner.

## 7. References

- A2-001 A-CR-CCP-951/PT-002 Director Cadets 3. (2006). *Royal Canadian Army Cadets Adventure Training Safety Standards*. Ottawa, ON: Department of Nation Defence.
- C2-087 Badyk, M., Buck, K., Sahl, N., Schultz, R., & Vrooman, D. (1998). *Ontario Learn to Mountain Bike Clinic Workbook (2<sup>nd</sup> ed.)*. North York, ON: Ontario Cycling Association and Ontario Recreational Mountain Bicycling Alliance.
- C2-088 (ISBN 1-55297-653-X) Crowther, N. (2002). *The Ultimate Mountain Bike Book: The Definitive Illustrated Guide to Bikes, Components, Techniques, Thrills and Trails*. Toronto, ON: Firefly Books Ltd.
- C2-089 Ministry of Transport Ontario. (2007). *Young Cyclists Guide*. Retrieved October 5, 2007, from <http://www.mto.gov.on.ca/english/safety/cycling/youngcyclist.htm>.
- C2-090 International Mountain Bicycling Association. (2007). *Trail Difficulty*. Retrieved October 10, 2007, from [http://www.imba.com/resources/trail\\_building/itn\\_17\\_4\\_trail\\_difficulty.html](http://www.imba.com/resources/trail_building/itn_17_4_trail_difficulty.html).
- C2-092 Ministry of Transport Ontario. (2007). *Cycling Skills: Cycling Safety for Teen and Adult Cyclists*. Retrieved October 5, 2007, from <http://www.mto.gov.on.ca/english/pubs/cycling/cyclingskills.htm>.

## 8. Training Aids

- Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,
- Fully equipped mountain bike,
- Mountain bike repair kit,



- d. Helmet,
- e. Day pack,
- f. Water carrier,
- g. Mountain bike group equipment,
- h. Lubricant, and
- i. Gear/masking tape.

9. **Learning Aids**

- a. Fully equipped mountain bike,
- b. Mountain bike repair kit,
- c. Helmet,
- d. Day pack, and
- e. Water carrier.

10. **Test Details.** This EO is assessed IAW S352 PC (Chapter 3, [Annex B](#), [Appendix 5](#)).

11. **Remarks**

- a. Cadets may have already received mountain bike training prior to this course. Consider the various skill levels of the cadets and adjust training times as required.
- b. This EO shall be conducted during the three-day expedition.
- c. Ensure that cadets are wearing a day pack and have an ample amount of water when mountain biking.

**EO S352.02 – PERFORM ADVANCED MOUNTAIN BIKE SKILLS**

1. **Performance.** Perform Advanced Mountain Bike Skills.
2. **Conditions**
  - a. Given:
    - (1) Fully equipped mountain bike,
    - (2) Helmet,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Intermediate mountain bike trails IAW A-CR-CCP-951/PT-002 during daylight hours.
3. **Standard.** The cadet shall:
  - a. identify types of obstacles;
  - b. ride a mountain bike on different types of terrain; and
  - c. participate in advanced mountain bike skills, to include:
    - (1) log hops,
    - (2) wheelies,
    - (3) bunny hops,
    - (4) track stands, and
    - (5) cornering.
4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Discuss mountain biking on intermediate trails, to include: <ol style="list-style-type: none"> <li>a. defining intermediate trails;</li> <li>b. adopting the appropriate body position;</li> <li>c. regulating speed, to include:               <ol style="list-style-type: none"> <li>(1) braking; and</li> <li>(2) gearing; and</li> </ol> </li> <li>d. maintaining control.</li> </ol>	Interactive Lecture	10 min	A2-001 C2-083 (pp. 110–111) C2-087 (pp. 43–45) C2-088 (pp. 134–137)

TP	Description	Method	Time	Ref
TP2	<p>Have the cadets brainstorm different types of terrain and obstacles that may be encountered when mountain biking on intermediate trails, to include:</p> <p>a. terrain, to include:</p> <ol style="list-style-type: none"> <li>(1) grass,</li> <li>(2) mud,</li> <li>(3) sand,</li> <li>(4) water, and</li> <li>(5) gravel; and</li> </ol> <p>b. obstacles, to include:</p> <ol style="list-style-type: none"> <li>(1) rocks,</li> <li>(2) roots,</li> <li>(3) logs,</li> <li>(4) ruts,</li> <li>(5) crevices, and</li> <li>(6) potholes.</li> </ol>	Group Discussion	10 min	<p>C2-083 (pp. 110–111)</p> <p>C2-087 (pp. 43–45)</p> <p>C2-088 (pp. 134–137)</p>
TP3	<p>Discuss mountain biking on different types of terrain, to include:</p> <p>a. grass,</p> <p>b. mud,</p> <p>c. sand,</p> <p>d. water, and</p> <p>e. gravel.</p>	Interactive Lecture	10 min	<p>C2-083 (pp. 110–111)</p> <p>C2-087 (pp. 43–45)</p> <p>C2-088 (pp. 134–137)</p>
TP4	<p>Conduct an activity in which the cadet will perform advanced mountain bike skills, to include:</p> <p>a. log hops,</p> <p>b. wheelies,</p> <p>c. bunny hops,</p> <p>d. track stands, and</p> <p>e. cornering.</p>	Practical Activity	110 min	<p>C2-083 (pp. 106–109, pp. 124–125)</p> <p>C2-087 (pp. 43–46)</p> <p>C2-088 (pp. 114–117)</p>
TP5	<p>Conduct a mountain bike training ride, on an intermediate trail, where the cadet, in a group of no more than eight, will practice:</p> <p>a. mountain biking on the following types of terrain, as available:</p> <ol style="list-style-type: none"> <li>(1) grass,</li> <li>(2) mud,</li> </ol>	Practical Activity	50 min	

TP	Description	Method	Time	Ref
	(3) sand, (4) water, and (5) gravel; and b. advanced mountain bike skills, to include: (1) log hops, (2) wheelies, (3) bunny hops, (4) track stands, and (5) cornering.			

#### 5. Time

a.	Introduction/Conclusion:	10 min
b.	Interactive Lecture:	20 min
c.	Group Discussion:	10 min
d.	Practical Activity:	160 min
e.	Total:	200 min

#### 6. Substantiation

- a. An interactive lecture was chosen for TPs 1 and 3 to introduce the cadet to mountain biking on intermediate trails, the different terrain and obstacles they may encounter when mountain biking on intermediate terrain and the ways to travel over different types of terrain.
- b. A group discussion was chosen for TP 2 as it allows the cadet to interact with their peers and share their knowledge and experiences about types of terrain and obstacles that may be encountered when mountain biking on intermediate trails. This helps develop a rapport by allowing the instructor to evaluate the cadet's responses in a non-threatening way while helping them refine their ideas. A group discussion also helps the cadet improve their listening skills and develop as a member of a team.
- c. A practical activity was chosen for TPs 4 and 5 as it is an interactive way for the cadets to learn and practice advanced mountain bike skills in a safe, controlled environment. These activities contribute to the development of mountain bike skills in a fun and challenging setting.

#### 7. References

- a. A2-001 A-CR-CCP-951/PT-002 Director Cadets 3. (2006). *Royal Canadian Army Cadets Adventure Training Safety Standards*. Ottawa, ON: Department of National Defence.
- b. C2-083 (ISBN 0-07-149390-5) Brink, T. (2007). *The Complete Mountain Biking Manual*. Camden, ME: Ragged Mountain Press.
- c. C2-087 Badyk, M., Buck, K., Sahl, N., Schultz, R., & Vrooman, D. (1998). *Ontario Learn to Mountain Bike Clinic Workbook (2<sup>nd</sup> ed.)*. North York, ON: Ontario Cycling Association and Ontario Recreational Mountain Bicycling Alliance.

- d. C2-088 (ISBN 1-55297-653-X) Crowther, N. (2002). *The Ultimate Mountain Bike Book: The Definitive Illustrated Guide to Bikes, Components, Techniques, Thrills and Trails*. Toronto, ON: Firefly Books Ltd.

## 8. Training Aids

- a. Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,
- b. Fully equipped mountain bike,
- c. Helmet,
- d. Day pack,
- e. Water carrier,
- f. Mountain bike group equipment,
- g. Whistle,
- h. 2 inch by 4 inch pieces of wood at least 1 m (3 feet) long,
- i. Logs (10–15 cm [4–6 inches] in diameter, at least 1 m [3 feet] long),
- j. Logs (40–50 cm [15–20 inches] in diameter, between 20–30 cm [8–12 inches] long),
- k. Three flat rocks (at least 40–50 cm [15–20 inches] in diameter, no higher than 5 cm [2 inches]),
- l. Pylons,
- m. Three 2-m lengths of mine tape,
- n. Six tent pegs, and
- o. Advanced mountain bike skill station cards.

## 9. Learning Aids

- a. Fully equipped mountain bike,
- b. Helmet,
- c. Day pack,
- d. Water carrier,
- e. 2 inch by 4 inch pieces of wood at least 1 m (3 feet) long,
- f. Logs (10–15 cm [4–6 inches] in diameter, at least 1 m [3 feet] long),
- g. Logs (40–50 cm [15–20 inches] in diameter, between 20–30 cm [8–12 inches] long),
- h. Three flat rocks (at least 40–50 cm [15–20 inches] in diameter, no higher than 5 cm [2 inches]),
- i. Pylons,
- j. Three 2-m lengths of mine tape,
- k. Six tent pegs, and
- l. Advanced mountain bike skill station cards.

10. **Test Details.** This EO is assessed IAW S352 PC (Chapter 3, [Annex B](#), [Appendix 5](#)).
11. **Remarks**
  - a. Ensure that cadets are wearing a day pack and have an ample amount of water when mountain biking.
  - b. This EO shall be conducted during the three-day expedition.
  - c. Assistant instructors are required to act as spotters for this lesson.

## **EO S355.04D – RIDE A MOUNTAIN BIKE ON INTERMEDIATE TRAILS DURING AN 18-DAY EXPEDITION**

1. **Performance.** Ride a Mountain Bike on Intermediate Trails During an 18-Day Expedition.
2. **Conditions**
  - a. Given:
    - (1) Fully equipped mountain bike,
    - (2) Helmet,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: N/A.
  - c. Environmental: Intermediate mountain bike trails IAW A-CR-CCP-951/PT-002 during daylight hours.
3. **Standard.** The cadet shall ride a mountain bike on intermediate trails during an 18-day expedition.
4. **Teaching Points**
  - a. Brief the cadets prior to the start of the activity, to include an explanation of:
    - (1) the objectives and importance of the activity;
    - (2) the resources that may be required to perform the activity; and
    - (3) any safety guidelines that must be followed while performing the activity.
  - b. Have the cadet ride a mountain bike on intermediate trails, on a linear route, as part of the 18-day expedition.
  - c. Debrief the cadets, ideally by the specialist who was involved in the activity by asking:
    - (1) how they felt about the activity;
    - (2) what they felt they accomplished; and
    - (3) what they would try to improve on if given the chance to complete the activity again.
5. **Time.** Regionally directed, as a portion of the 18-day expedition.
6. **Substantiation.** The experiential approach was chosen for this activity as it allows the cadets to acquire new knowledge and skills through a direct experience. The cadet experiences mountain biking on intermediate trails during and expedition and defines that experience on a personal level. The cadet will be given the opportunity to reflect on and examine what they saw, felt and thought while mountain biking and consider how it relates to what they already learned and experienced as well as how it will relate to further experiences.
7. **References.** A2-001 A-CR-CCP-951/PT-002 Director Cadets 3. (2006). *Royal Canadian Army Cadets Adventure Training Safety Standards*. Ottawa, ON: Department of National Defence.
8. **Training Aids**
  - a. Fully equipped mountain bike, and

- b. Helmet.

9. **Learning Aids**

- a. Fully equipped mountain bike, and
- b. Helmet.

10. **Test Details.** N/A.

11. **Remarks**

- a. A minimum of three modes of travel of the 18-day expedition are to be selected from EO S355.04A (Paddle a Canoe on Flatwater During an 18-Day Expedition), EO S355.04B (Paddle a Voyageur Canoe on Flatwater During an 18-Day Expedition), EO S355.04C (Paddle a Canoe on Moving Water During an 18-Day Expedition), EO S355.04D (Ride a Mountain Bike on Intermediate Trails During an 18-Day Expedition) and EO S355.04E (Hike on Class 3 Terrain During an 18-Day Expedition).
- b. IAW A-CR-CCP-951/PT-002:
  - (1) a fully equipped mountain bike is described as having the following:
    - (a) bell or horn,
    - (b) lights, and
    - (c) reflectors; and
  - (2) the following group equipment is required when riding a mountain bike:
    - (a) reflective vest (worn by person in rear of group),
    - (b) map of area (if required),
    - (c) compass,
    - (d) first aid kit,
    - (e) communication device (eg, cellular phone or hand-held radio), and
    - (f) mountain bike repair kit.
- c. The intensity level of the activity shall follow that progression matrix outlined in A-CR-CCP-951/PT-002.
- d. There will be no instructional guide provided for this EO. If required, instructional information can be located in PO S352 (Ride a Mountain Bike on Intermediate Trails, Chapter 4, [Section 8](#)).
- e. Ensure the cadet is wearing a day pack and have a supply of water when riding.