

AERIAL GOAT CENSUS  
OCTOBER 11 to 15, 1983  
KOOTENAY NATIONAL PARK

Prepared by: B.R. Sheehan  
Park Warden  
October 26, 1983

TABLE OF CONTENTS

	<u>Page</u>
List of Tables .....	ii
List of Maps .....	iii
List of Photographs .....	iv
List of Appendices .....	v
Abstract .....	vi
1.0 Introduction .....	1
2.0 Goals and Objectives .....	1
3.0 Methodology .....	3
4.0 Results .....	6
5.0 Discussion .....	9
6.0 Conclusions .....	13
7.0 Financial/Manpower .....	13
8.0 References .....	15
9.0 Appendix .....	15

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Summary Mountain Goat Aerial Census Flights, October 11 to 15, 1983 .....	5
2. Summary Mountain Goat Aerial Census Flights, September 25 to October 16, 1978 .....	10
3. Summary of Financial Breakdown .....	14
4. Summary of Man-Hours .....	14

LIST OF MAPS

<u>Map</u>	<u>Page</u>
1. Location of Kootenay National Park .....	2
2. Aerial Coverage by Day .....	4
3. Aerial Goat Census - Species Locations .....	Enclosure

LIST OF PHOTOGRAPHS

<u>Photographs</u>	<u>Page</u>
Photo 1 Southerly Facing Slope above Ottertail Pass .....	7
Photo 2 Ascending Ridge on Mount Numa above the Vermilion Valley ....	7
Photo 3 Eastern Face of Mount Whitetail .....	8
Photo 4 Westerly Facing Talus Slope on Mount Harkin .....	8

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
1. Flight Reports .....	16
2. Occurrence Reports .....	22
3. Financial Reports .....	28

Abstract:

In accordance with the Wildlife Monitoring Program, a fall (October 11 to 15, 1983) Mountain Goat (Oreamnos americanus) census was flown of all alpine ecoregions within Kootenay National Park. A total of 439 wildlife observations were recorded with the minimum Mountain Goat population being 300 animals. The Vermilion, Stanford and Ball Ranges accounted for the majority of goat observations; however, goats were noted on all ranges. Five other wildlife species were recorded of which Grizzly Bear (Ursus arctos) and Big Horn Sheep (Ovis canadensis) were of special note.

## 1.0 Introduction:

Mountain Goats (Oreamnos americanus) within Kootenay National Park inhabit every major mountain range (Brown 1977; Gibbons 1978) and appear to be one of the most numerous of the large ungulates present (Brown 1977; Gibbons 1978; Poll Et al 1982.)

Although not designated as goat surveys, helicopter flights were conducted in 1968 and 1969 to inventory all large mammals (Brown 1977). A limited helicopter census for the Bow and Vermilion Ranges was flown in April 1977 (Warden Wildlife Card Records), however, it was not until Gibbons (1978) that a census specifically designed for goat was flown. Gibbons (1978) flew all the mountain ranges within the park and obtained a count of 231 goats and an estimated minimum population figure of 305 animals.

The Park Conservation Plan (1983) for Kootenay identified resource monitoring as one of the major resource related problems. Funding was made available in 1983 to implement the Wildlife Monitoring Program of which, the Mountain Goat census is a sub program.

## 2.0 Goals and Objectives:

### 2.1 Goal:

To obtain a minimum population estimate for Mountain Goats within Kootenay National Park.

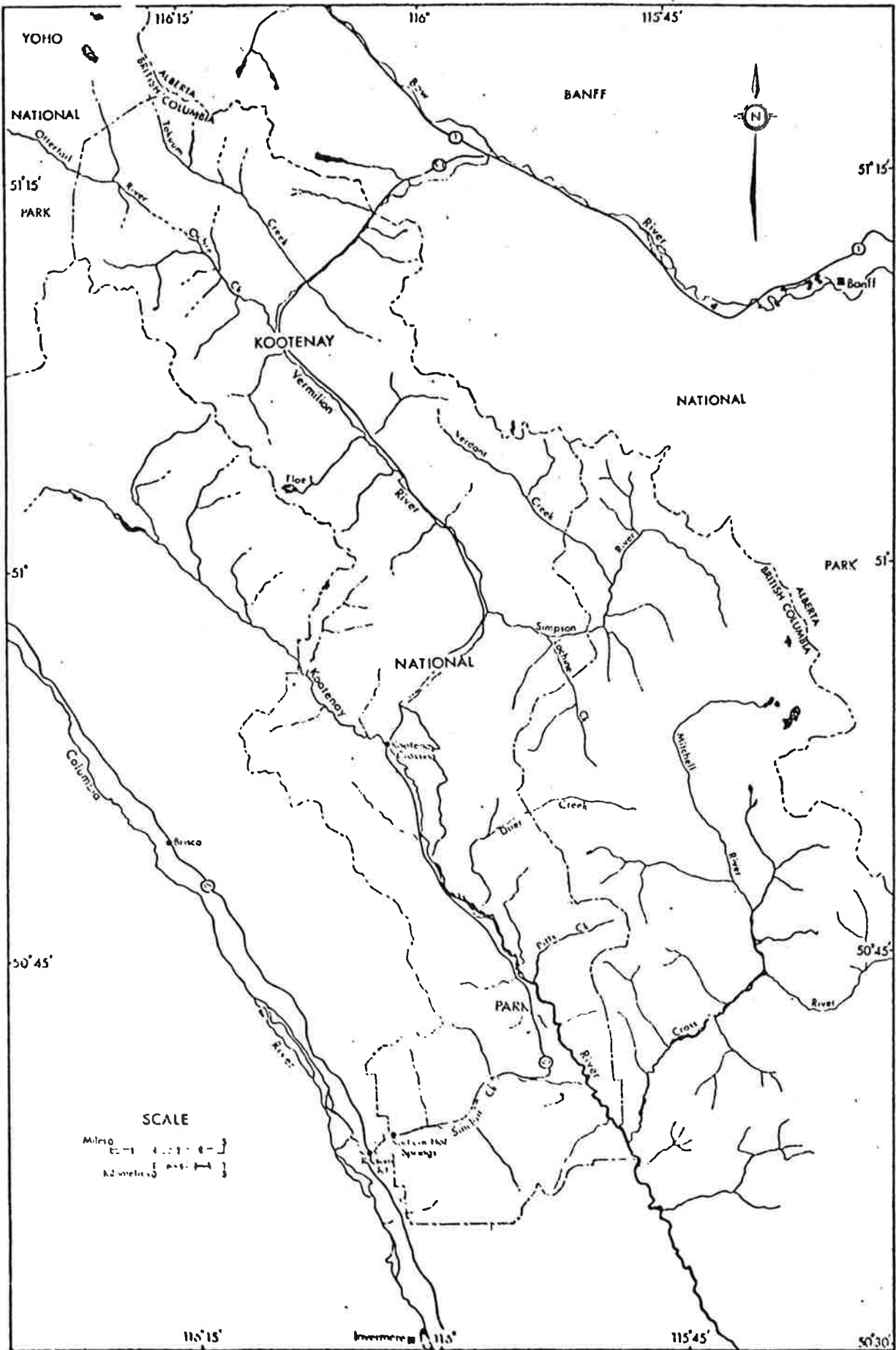
### 2.2 Objectives:

To conduct an aerial goat census of all alpine ecoregions recording numbers and locations.

To record other wildlife encountered during the flights as to species, numbers and locations.



Map 1: Location of Kootenay National Park.



To identify the major fall Mountain Goat ranges within the park.

To test the aerial Mountain Goat Monitoring Program as to its methodology and effectiveness in observing animals.

### 3.0 Methodology:

3.1 A systematic series of aerial flights will be conducted to survey all mountain ranges within Kootenay National Park.

3.1.1 Four days (12 hours) will be required to survey the entire park (map 2).

3.1.2 The aircraft required for the census is a Bell 206B helicopter.

3.1.3 The flight lines will be flown at 7,500 feet (alpine ecoregion) (map 3).

3.1.4 The helicopter will be flown between 60 - 80 miles per hour.

3.2 Where feasible, flights will survey alpine areas adjacent to the park boundary.

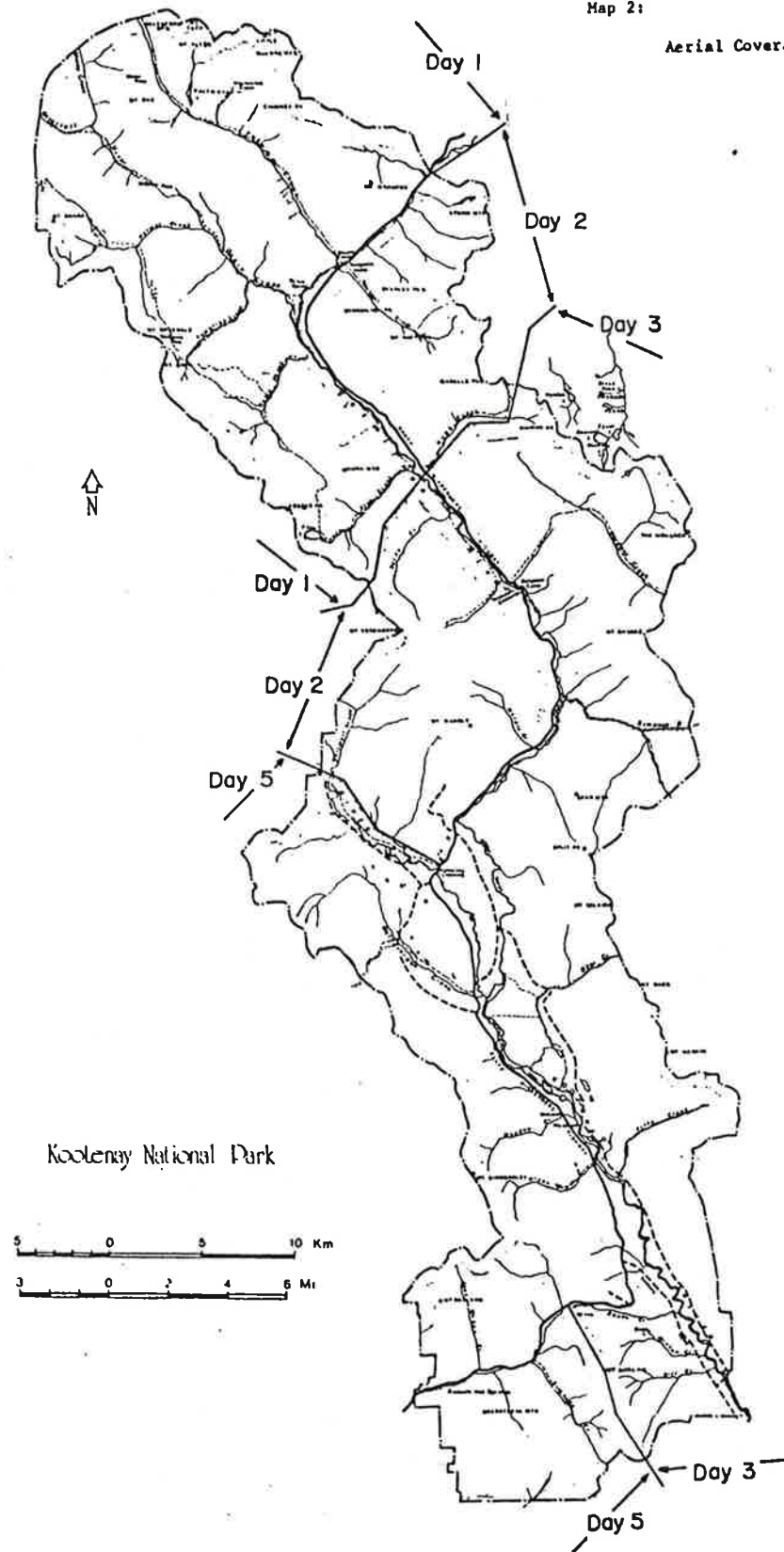
3.3 All wildlife observed during the census will be recorded on N.T.S. 1:50,000 map sheets and the appropriate Can.S.I.S. Wildlife Aerial Census Forms.

3.3.1 Three park wardens will be required for the aerial flights.

3.3.2 One park warden will act as a navigator and recorder of observations.

3.3.3 The other two park wardens will act as observers.

Map 2:  
Aerial Coverage by Day



T A B L E 1

<u>MOUNTAIN RANGE</u>	<u>S P E C I E S</u>					
	<u>MOUNTAIN GOAT</u>	<u>BIGHORN SHEEP</u>	<u>GRIZZLY BEAR</u>	<u>MULE DEER</u>	<u>ELK</u>	<u>COYOTE</u>
Bow Range	33	-	-	-	-	-
Ball Range	60	-	-	-	-	-
Vermilion Range	133	-	4	-	21	1
Mitchell Range	17	11	-	2	-	-
Brisco Range	12	61	5	11	-	-
Stanford Range	45	18	-	5	-	-
TOTAL	300	90	9	18	21	1

SUMMARY MOUNTAIN GOAT AERIAL CENSUS FLIGHTS

October 11 - 15, 1983

#### 4.0 Results:

A total of fourteen point six helicopter hours (14.6) flown over five days (October 11 - 15, 1983) were required to survey the alpine eco-regions within the park. During this period 300 Mountain Goats were recorded. Goats were observed on all ranges (Table 1) but were most numerous on the Vermilion Range (133) especially the Mount Wardle/Mount Verendrye complex (99). Similiar areas of concentration were noted on the Stanford Range - Mount Sinclair (38) and Ball Range - Hawk Ridge (22) and Mount Haffner (17). Refer to Map 3 for individual locations. The average group size sighted was two to three goats, with several single observations on the exposed habitats. The largest groups recorded were on Mount Wardle and Mount Sinclair (11 and 10 respectively), both areas also had a group of 9 goats. Observations ranged between 6,000 feet (Mount Wardle) and 8,900 (Mount Oke) in elevation with the average being approximately 7,500 feet.

Five additional wildlife species were observed and recorded during the flights: Bighorn Sheep (Ovis canadensis), Grizzly Bear (Ursus arctos), Mule Deer (Odocoileus hemionus), Elk (Cervus elaphus) and Coyote (Canis latrans). Refer to Table 1 for species, distribution and numbers.

Bighorn Sheep were observed on three ranges - the Brisco, Stanford and Mitchell, particularly the Brisco Range (Mount Kindersley) with 61 sightings. The majority of sheep observations were in the upper sub-alpine ecoregion.

Two family groups of Grizzly Bears and two lone bears were also noted. All sightings were in the upper subalpine ecoregion, southerly facing

slopes and at approximately 7,300 feet in elevation. One family group, a sow and three cubs were observed on the provincial side of Luxor Pass, while the other group, a sow and two cubs, were noted in the Floe Lake area, refer to Map #3 for specific locations. Individual sightings were made on the Wardle and Nixon Creek drainages.

#### 5.0 Discussion:

Five days were required to fly the goat census instead of the predicted four. Only 1.5 hours were flown on October 14th, as the cloud ceiling closed in to 7,200 feet after the flight had commenced.

Ground observation conditions for the first three days were excellent with all but the northern slopes being snow free. Snow fell and conditions deteriorated during the night of October 13th making observations very difficult. Many of the goats recorded on the final flight (October 15th) were in the upper subalpine - alpine ecoregions amongst the trees.

It was noted after the first few sightings (October 11th) that the majority of goats were in the 7,500 foot elevation range (alpine ecoregion). Time, costs and efficiency of sightings have to be taken into consideration for the census planning. Similar flights in future years should also follow this flight line. The only deviations from this height were for the lower slopes of Mount Wardle, sections of the Stanford and Brisco Ranges and closer looks at specific groups to facilitate easier counting.

Although a little more costly, air speed was kept at 60 - 80 m.p.h.. The resultant blade slap started the goats moving and made observations much easier.

T A B L E 2

<u>MOUNTAIN RANGE</u>	<u>ACTUAL COUNT</u>	<u>REVISED COUNT*</u>
Ball Range	42	60
Vermilion Range	106	130
Mitchell Range	17	30
Brisco Range	10	25
Stanford Range	56	60
TOTAL	231	305

SUMMARY MOUNTAIN GOAT AERIAL CENSUS FLIGHTS

September 25 - October 16, 1978

\*"Revised population data is based on this fall's aerial survey, plus ground observations made by Park Wardens over the past five years." (Gibbons 1978).

Table 2 depicts the results of the 1978 census flown by Gibbons. The 231 figure of actual goat sightings differs significantly from the results of the 1983 census by 69 animals. Gibbons revised count of 305 goats tallies with the results of the 1983 census (300 goats); however, the method used to calculate this number makes the results questionable.

Several interrelated factors may explain the difference in actual counts between the Gibbons (1978) census and the 1983 census. First, the air speed of the helicopter was faster on the 1978 census. This fact is not noted in the Gibbons (1978) report; however, personal communication with Park Warden, Hans Fuhrer (observer 1978 and 1983) confirmed this assumption. Second, as reported in the Gibbons (1978) report, ground observation was hampered by snow cover during the majority of the census. Third, the goats may have moved out of the alpine area at the time Gibbons flew due to the snow conditions. Fourth, the flights may have been flown at different elevations thereby sampling separate habitats. Finally, natural population fluctuations over the five year period between censusing will have contributed to the count differences.

Results of the two aerial censuses initially indicate that the Vermilion Range maybe the most important area for goats at this time of year, with the Stanford, Ball and Bow Ranges next in importance. Gibbons (1978) did not indicate the numbers observed on the Bow Range; it is assumed however, that they were included within the Vermilion totals. Less favorable ranges appear to be Bow, Mitchell and Brisco respectfully. Further aerial flights at specific times of the year will be required to verify the seasonal importance of these ranges.

Time and low fuel made it impossible to fly the alpine areas on the provincial side of the Brisco Range. As there are major alpine areas here,



these should be included in future flights.

It was decided to re-fly the eastern slopes of Mount Sinclair as a period of over forty hours had elapsed between flights and it was assumed that the goats may have moved over to the western slopes. On the initial flight, thirty goats were observed, while on the second only two goats were noted, however, no large groups were located on the western slopes. The goats could have been missed during the second flight due to the inclement weather on the night of October 13th that may have moved them out of the alpine into the trees or they may have moved out of the survey area altogether. In future, more specific cut off points should be utilized where a possible overlap of observations will not occur.

No accurate conclusions as to goat population trends may be made at this time. It would appear that the population is stable if not increasing slightly, however, another two consecutive years of data is required for conclusions to be arrived at with any degree of credibility.

With the exception of a few Bighorn Sheep on the Mitchell Range, the Mount Kindersley - Mount Sinclair complexes accounted for 88% of the total sheep observations. Consideration should be afforded these two areas for future monitoring programs.

Of special note were the nine Grizzly Bear observations. All sightings were in the upper subalpine, southerly facing slopes at approximately 7,300 feet in elevation. Although not meeting all the criteria for den sites, i.e. aspects from N.N.E. to E.S.E., average mean altitude of 2,280 m (7,500 feet) and average slopes of 33° (Vroom Et al 1977), these four sites are excellent indicators that the bears may be hibernating in the general vicinity.

6.0 Conclusions:

- 6.1 A minimum of fourteen hours over four consecutive days will be required to fly an effective Mountain Goat census.
- 6.2 Ground conditions during the census should be free of snow.
- 6.3 Only the alpine ecoregion should be concentrated upon during the census.
- 6.4 Helicopter air speed is most effective between 60 - 80 miles per hour.
- 6.5 Where possible the provincial side of the Mitchell, Stanford and Brisco Ranges should be surveyed for Mountain Goats.
- 6.6 Kootenay National Park has a minimum Mountain Goat population of 300 animals and they may be considered one of the most numerous large mammals in the park.
- 6.7 The Vermilion, Stanford and Ball complexes appear to be the main mountain ranges for goat within the park during the fall period.

7.0 Financial/Manpower:

7.1 Financial:

The total cost for the Mountain Goat aerial census was \$7,354.77. Refer to Table 3 for financial summary. It should be noted that these costs do not include man-hours during the flight, report writing, production (typing and drafting.)

7.2 Manpower:

A total of 87.5 man-hours were required for the census flights. On the last flight a non warden staff member acted as the third observer.

T A B L E 3

Company - Okanagan Helicopters Ltd.  
 Aircraft - Bell 206 B Helicopter  
 Rate - \$450.00 per hour plus fuel

<u>DATES</u>	<u>HOURS*</u>	<u>SUBTOTAL</u>	<u>FUEL</u>	<u>OIL</u>	<u>COST \$</u>
11/10/83	3.7	\$1665.00	\$195.18	\$ 3.70	\$1863.88
12/10/83	3.0	1350.00	158.25	3.00	1511.25
13/10/83	3.1	1395.00	163.53	3.10	1561.63
14/10/83	1.5	675.00	79.13	1.50	755.63
15/10/83	3.3	1485.00	174.08	3.30	1662.38
TOTAL	14.6	\$6570.00	\$770.17	\$14.60	\$7354.77

SUMMARY OF FINANCIAL BREAKDOWN

\*Refer to Appendix A for flight reports.

T A B L E 4

<u>DATES</u>	<u>HELICOPTER HOURS</u>	<u>NUMBER WARDENS</u>	<u>MAN-HOURS*</u>
11/10/83	3.7	3	16.5
12/10/83	3.0	3	16.5
13/10/83	3.1	3	21.0
14/10/83	1.5	3	18.5
15/10/83	3.3	2	15.0
TOTAL	14.6		87.5

SUMMARY OF MAN-HOURS

\*Hours include travel to and from lift-off points, down time for refueling and poor visibility. Refer to Appendix B for occurrence reports.

8.0 References:

- 8.1 Banfield, A.W.F. 1974. The Mammals Of Canada. University of Toronto Press. 438 pp.
- 8.2 Brown, W.A. 1977. The Status Of The Rocky Mountain Goat (Oreamnos americanus) in Kootenay National Park. Unpublished report. Kootenay National Park Warden File C9810-8/115/K2. 19 pp.
- 8.3 Gibbons, T.R. 1978. Goat Census Kootenay National Park. September 25 to October 16, 1978. Unpublished report. Kootenay National Park Warden File C9810-8/115/K2. 6 pp.
- 8.4 Poll, D.M., M.M. Porter, M.J. Hamilton. 1982. The Wildlife Inventory Of Kootenay National Park Interim Report 1981. Canadian Wildlife Service, Edmonton, Alberta. 83 pp.
- 8.5 Vroom, G.W., S. Herrero and R.T. Ogilvie. 1977. The Ecology Of Winter Den Sites Of Grizzly Bears In Banff National Park, Alberta. Pp. 321 - 330 in Martinka, C.J. and K.L. McArthur, Eds. 1980. Bears And Their Biology. Bear Biology Association Conference Series, No. 3.
- 8.6 Warden Service. 1983. Kootenay National Park Interim Park Conservation Plan. Unpublished report. Resource Management. 57 pp.

9.0 Appendix:

- 9.1 Appendix A - Flight Reports
- 9.2 Appendix B - Occurrence Reports
- 9.3 Appendix C - Financial Reports

APPENDIX A

FLIGHT REPORTS



**OKANAGAN HELICOPTERS LTD.**  
 4391 AGAR DRIVE, INTERNATIONAL AIRPORT  
 VANCOUVER, B.C. V7B 1A3  
 TEL. (604) 278-5502 TELEX: 04-355594

FLIGHT DATE	DAY	MO.	YR.	531774
	11	10	83	

COMPANY	TYPE OF CONTRACT - X	CONTRACT NO.	SUB. NO.	TYPE OF FLYING
1	HOURLY	DAILY MINIMUM 1-29 DAYS	30 DAYS OR MORE	

BASE No.	BASE NAME	AIRCRAFT TYPE	AIRCRAFT CODE	AIRCRAFT CALL SIGN	FLIGHT LOCATION	FLIGHT LOCATION NO.	IND. CLASS NO.
0115	Banff	206B	16	GBHE	KOOTENAY	6507	

CUSTOMER NAME AND ADDRESS  
 KOOTENAY NATIONAL PARK  
 Box 220  
 Badger Hot Springs B.C.  
 VOA-1M0

PILOT No. 1	Bob Johnson	25916
PILOT No. 2		
ENGINEER No. 1		
ENGINEER No. 2		

P.O. NUMBER	NO. PASSENGERS	FREIGHT LBS.	CARGO DECLARED VALUE
			5

OPERATION	TAKE OFF	LAND	FLYING TIME
Banff - KOOTENAY Park North West Boundary			3.7
Game Count - Banff			

SOURCE CODE	G.L.	DIV.	SUB.	EXTRA CHARGE OR ADJUSTMENT	AMOUNT	NON REV. HRS.	REV. HRS.	TOTAL HOURS	TARIFF RATE	AMOUNT
							3.7	3.7		
							TARIFF ZONE CODE	F+4		

UNLESS OTHERWISE STATED, PAYMENT IS DUE UPON RECEIPT OF INVOICE. INTEREST WILL BE CHARGED ON OVERDUE INVOICES.

CUSTOMER NUMBER	INVOICE DATE	DAY	MO.	YR.
-----------------	--------------	-----	-----	-----

THE CARRIAGE OF PASSENGERS, BAGGAGE AND GOODS BY OKANAGAN HELICOPTERS LTD. IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF LIABILITY SET FORTH IN ITS TARIFF (E.G. LIABILITY FOR LOSS OR DAMAGE TO GOODS IS LIMITED TO 50 CENTS PER POUND) FILED WITH THE ATC. AN EXTRACT OF WHICH IS AVAILABLE FOR EXAMINATION AT THE OFFICE OF OKANAGAN HELICOPTERS LTD.

PRINT NAME OF PERSON AUTHORIZED TO SIGN FOR CHARTERER

SIGNED FOR CHARTERER BY  
*[Signature]*

SIGNED FOR CARRIER BY  
*[Signature]*

OUR FUEL GALS./LTRS.	211
OUR FUEL GALS./LTRS.	
OUR FUEL GALS./LTRS.	
OUR OIL - HRS.	@ 100
CUST. FUEL HRS.	
EXTRA CHARGES	
SUB. TOT.	
TOTAL	\$

FLIGHT REPORT - CUSTOMER COPY



OKANAGAN HELICOPTERS LTD.  
 4391 AGAR DRIVE, INTERNATIONAL AIRPORT  
 VANCOUVER, B.C. V7B 1A5  
 TEL. (604) 278-5502 TELEX: 04-355594

FLIGHT DATE	DAY	MO	YR.	531775	
12/10/83					
COMPANY	TYPE OF CONTRACT - X		CONTRACT NO.	SUB. NO.	TYPE OF FLYIN
1					
HOURLY	DAY MINIMUM 1-29 DAYS	30 DAYS OR MORE			

BASE No.	BASE NAME	AIRCRAFT TYPE	AIRCRAFT CODE	AIRCRAFT CALL SIGN	FLIGHT LOCATION	FLIGHT LOCATION NO.	NO. CLASS N
015	BentH	206B	16	G B H E	KOOTENAY PK	6507	
CUSTOMER NAME AND ADDRESS				NAME			
KOOTENAY National Park				PILOT No. 1			
Box 220				Bob JOHNSON			
Radium, B.C.				PILOT No. 2			
VOA-1M0				ENGINEER No. 1			
P.D. NUMBER				ENGINEER No. 2			
NO. PASSENGERS				FREIGHT LBS.			
CARGO DECLARED VALUE							

OPERATION	TAKE OFF	LAND	FLYING TIME
BentH - Numa PK Lot - Wildlife Study			4.4
Plus Slings Loads to wander Cabins			
Wildlife Study			3.0
Slings operation			1.4

SOURCE CODE	G.L.	DIV.	SUB	EXTRA CHARGE OR ADJUSTMENT	AMOUNT	NON REY. HRS.	REY. HRS.	TOTAL HOURS	TARIFF RATE	AMOUNT
							4.4	4.4		
									450.00	

UNLESS OTHERWISE STATED, PAYMENT IS DUE UPON RECEIPT OF INVOICE. INTEREST WILL BE CHARGED ON OVERDUE INVOICES.

CUSTOMER NUMBER	INVOICE DATE	DAY	MO.	YR.	OUR FUEL GALS./LTRS.
					211
THE CARRIAGE OF PASSENGERS, BAGGAGE AND GOODS BY OKANAGAN HELICOPTERS LTD. IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF LIABILITY SET FORTH IN ITS TARIFF (E.G. LIABILITY FOR LOSS OR DAMAGE TO GOODS IS LIMITED TO 50 CENTS PER POUND) FILED WITH THE ATC, AN EXTRACT OF WHICH IS AVAILABLE FOR EXAMINATION AT THE OFFICE OF OKANAGAN HELICOPTERS LTD.					OUR FUEL GALS./LTRS.
					OUR FUEL GALS./LTRS.
					OUR OIL - HRS.
PRINT NAME OF PERSON AUTHORIZED TO SIGN FOR CHARTERER					CUST. FUEL HRS.
SIGNED FOR CHARTERER BY					EXTRA CHARGES
SIGNED FOR CARRIER BY					SUB. TOT.
					TOTAL \$

FLIGHT REPORT - CUSTOMER COPY



OKANAGAN HELICOPTERS LTD.  
 4391 AGAR DRIVE, INTERNATIONAL AIRPORT  
 VANCOUVER, B.C. V7B 1A5  
 TEL. (604) 278-5502 TELEX: 04-355594

FLIGHT DATE	DAY	MO.	YR.	531777	
	13	10	83		
COMPANY	TYPE OF CONTRACT - X		CONTRACT NO.	SUB. NO.	TYPE OF FLYING
	1				
HOURLY	DAILY MAXIMUM 1 TO 29 DAYS	30 DAYS OR MORE			

BASE No.	BASE NAME	AIRCRAFT TYPE	AIRCRAFT CODE	AIRCRAFT CALL SIGN	FLIGHT LOCATION	FLIGHT LOCATION NO.	CLASS NO.
015	Banff	206B	16	G B H E	Kootenay Pk	65	07
CUSTOMER NAME AND ADDRESS				NAME			
KOOTENAY PARK				Bob Johnson			
Box 220				259116			
Radium, BC							
P.O. NUMBER		NO. PASSENGERS	FREIGHT LBS.	CARGO DECLARED VALUE	ENGINEER No. 1		
					ENGINEER No. 2		

OPERATION	TAKE OFF	LAND	FLYING TIME
Banff - Nunnis - Slings to Cabins - Wildlife Study - Mitchell Range - Ball Range - Part of Standard Range			4.3
Slings 1.2			
Wildlife 3.1			

SOURCE CODE	G.L.	DIV.	SUB	EXTRA CHARGE OR ADJUSTMENT	AMOUNT	NON REV. HRS.	REV. HRS.	TOTAL HOURS	TARIFF RATE	AMOUNT
							4.3	4.3	F***	450.00

UNLESS OTHERWISE STATED, PAYMENT IS DUE UPON RECEIPT OF INVOICE. INTEREST WILL BE CHARGED ON OVERDUE INVOICES.

CUSTOMER NUMBER	INVOICE DATE	DAY	MO.	YR.	OUR FUEL GALS./LTRS.	OUR FUEL GALS./LTRS.	OUR FUEL GALS./LTRS.	OUR OIL - HRS.	CUST. FUEL HRS.	EXTRA CHARGES	SUB. TOT.
THE CARRIAGE OF PASSENGERS, BAGGAGE AND GOODS BY OKANAGAN HELICOPTERS LTD. IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF LIABILITY SET FORTH IN ITS TARIFF (E.G. LIABILITY FOR LOSS OR DAMAGE TO GOODS IS LIMITED TO 50 CENTS PER POUND) FILED WITH THE ATC, AN EXTRACT OF WHICH IS AVAILABLE FOR EXAMINATION AT THE OFFICE OF OKANAGAN HELICOPTERS LTD.											
PRINT NAME OF PERSON AUTHORIZED TO SIGN FOR CHARTERER											
SIGNED FOR CHARTERER BY					SIGNED FOR CARRIER BY						
<i>B. S. Skelton</i>					<i>Bob Johnson</i>						
TOTAL \$											

FLIGHT REPORT - CUSTOMER COPY





OKANAGAN HELICOPTERS LTD.  
 4391 AGAR DRIVE, INTERNATIONAL AIRPORT  
 VANCOUVER, B.C. V7B 1A3  
 TEL. (604) 278-5502 TELEX: 04-333594

- 20 -

DAY	MO.	YR.	531779
14	10	83	

COMPANY	TYPE OF CONTRACT - X	CONTRACT NO.	SUB NO.	TYPE OF FLYING
1				

BASE No	BASE NAME	AIRCRAFT TYPE	AIRCRAFT CODE	AIRCRAFT CALL SIGN	FLIGHT LOCATION	FLIGHT LOCATION NO	IND CLASS NO.
0115	Bent	206B	16	GBHE	Kootenay Pk	65	07

CUSTOMER NAME AND ADDRESS  
 Brent, Bent Kootenay Pk  
 Box 900 200  
 Brent, Bent Kootenay Pk

PILOT No. 1	NAME	NUMBER
	Bob Johnson	25916
PILOT No. 2		
ENGINEER No. 1		
ENGINEER No. 2		

P.O. NUMBER	NO PASSENGERS	FREIGHT LBS	CARGO DECLARED VALUE
K-3491-83-0653			

OPERATION	TAKE OFF	LAND	FLYING TIME
Bent - Kootenay Pk (Simpson Mt)	0915		
Goat count - Radium - Brent		1500	1.5
"Weather delay"			

SOURCE CODE	G.L.	DIV.	SUB	EXTRA CHARGE OR ADJUSTMENT	AMOUNT	NON REV. HRS.	REV. HRS.	TOTAL HOURS	TARIFF RATE	AMOUNT
							1.5	1.5		

UNLESS OTHERWISE STATED, PAYMENT IS DUE UPON RECEIPT OF INVOICE. INTEREST WILL BE CHARGED ON OVERDUE INVOICES.

CUSTOMER NUMBER	INVOICE DATE	DAY	MO.	YR.

THE CARRIAGE OF PASSENGERS, BAGGAGE AND GOODS BY OKANAGAN HELICOPTERS LTD. IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF LIABILITY SET FORTH IN ITS TARIFF (E.G. LIABILITY FOR LOSS OR DAMAGE TO GOODS IS LIMITED TO 50 CENTS PER POUND) FILED WITH THE ATC. AN EXTRACT OF WHICH IS AVAILABLE FOR EXAMINATION AT THE OFFICE OF OKANAGAN HELICOPTERS LTD.

OUR FUEL GALS./LTRS.	24
OUR FUEL GALS./LTRS.	
OUR FUEL GALS./LTRS.	
OUR OIL - HRS.	@ 100
CUST. FUEL HRS.	
EXTRA CHARGES	
SUB. TOT.	
TOTAL	\$

PRINT NAME OF PERSON AUTHORIZED TO SIGN FOR CHARTERER  
 SIGNED FOR CHARTERER BY: [Signature]  
 SIGNED FOR CARRIER BY: [Signature]

FLIGHT REPORT - CUSTOMER COPY



**OKANAGAN HELICOPTERS LTD.**  
 4391 AGAR DRIVE, INTERNATIONAL AIRPORT  
 VANCOUVER, B.C. V7B 1A5  
 TEL. (604) 278-5502 TELEX: 04-353594

- 21 -

FLIGHT DATE	DAY	MO.	YR.	531780
	15	10	83	

COMPANY	TYPE OF CONTRACT - X	CONTRACT NO	SUB. NO	TYPE OF FLYING
1				

SE No.	BASE NAME	AIRCRAFT TYPE	AIRCRAFT CODE	AIRCRAFT CALL SIGN	FLIGHT LOCATION	FLIGHT LOCATION NO.	IND CLASS NO.
0115	Bent	206B	116	G B H E	KOOTENAY	65017	

CUSTOMER NAME AND ADDRESS  
 KOOTENAY National Pic  
 Box 220  
 Kootenay, B.C.

PILOT No. 1	B. JOHNSON	2159116
PILOT No. 2		
ENGINEER No. 1,		
ENGINEER No. 2		

P.O. NUMBER	NO. PASSENGERS	FREIGHT LBS	CARGO DECLARED VALUE
K-3491-83-0653			

OPERATION	TAKE OFF	LAND	FLYING TIME
Bent - Coy Camp - <del>...</del> Summit			3.3
BRISCO Reman - Bent			

SOURCE CODE	G.L.	DIV.	SUB	EXTRA CHARGE OR ADJUSTMENT	AMOUNT	NON REV. HRS.	REV. HRS.	TOTAL HOURS	TARIFF RATE	AMOUNT
							3.3	3.3	450	

UNLESS OTHERWISE STATED, PAYMENT IS DUE UPON RECEIPT OF INVOICE. INTEREST WILL BE CHARGED ON OVERDUE INVOICES.

CUSTOMER NUMBER	INVOICE DATE	DAY	MO.	YR.

THE CARRIAGE OF PASSENGERS, BAGGAGE AND GOODS BY OKANAGAN HELICOPTERS LTD. IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF LIABILITY SET FORTH IN ITS TARIFF (E.G. LIABILITY FOR LOSS OR DAMAGE TO GOODS IS LIMITED TO 50 CENTS PER POUND) FILED WITH THE AIC AN EXTRACT OF WHICH IS AVAILABLE FOR EXAMINATION AT THE OFFICE OF OKANAGAN HELICOPTERS LTD.

PRINT NAME OF PERSON AUTHORIZED TO SIGN FOR CHARTERER

SIGNED FOR CHARTERER BY: *[Signature]*

SIGNED FOR CARRIER BY: *[Signature]*

OUR FUEL GALS./LTRS.	211
OUR FUEL GALS./LTRS.	
OUR FUEL GALS./LTRS.	
OUR OIL - HRS.	@ 1.25
CUST. FUEL HRS.	
EXTRA CHARGES	
SUB. TOT.	
TOTAL	\$

APPENDIX B

OCCURRENCE REPORTS



OCCURRENCE REPORT

PARKS CANADA WARDEN SERVICE

TO NOTE \_\_\_\_\_

SUBJECT WILDLIFE - AERIAL CENSUS - GOAT

DATE OCT 11 / 83 9:30 - 16:00 HRS.

LOCATION OF INCIDENT NORTHWEST TERTION - KNP

PERSONS INVOLVED

NAME	ADDRESS	PHONE

DETAILS AWIOLU GOAT CENSUS - OKANAGAN HELICOPTERS LTD

OBSERVERS - B. SHULTZMAN PASS - FRED (GARRE)

- H. FURKETS

- G. WATKINS

ACTION TAKEN AERIAL FLIGHT DIVIDE PARKING LOT TO  
FULL LAKE (BOW AND COLUMBIA RAILGLES)

- WILDLIFE - GOAT - 72

LYLL - 1

GRIZ - 3 (FULL LAKE) 2 CUBS

WEATHER: CLEAR / COOL

GROUND CONDITIONS: GENERALLY SNOW FREE - SOME IN NORTH / NORTH  
EAST SLOPES

NOTES AND RECOMMENDATIONS

HOURS INVOLVED FLIGHT 3.7 / INSTRUMENTS 16.5

INVESTIGATING WARDEN (S) B. Shultzman



OCCURRENCE REPORT

PARKS CANADA WARDEN SERVICE

TO NOTE \_\_\_\_\_

SUBJECT WILDLIFE - AERIAL CENSUS - GRIT

DATE OCT 12 / 03 9:30 - 4:00 HRS.

LOCATION OF INCIDENT MT. CANNON - STERON - BIRCH

PERSONS INVOLVED

NAME	ADDRESS	PHONE

DETAILS AERIAL CENSUS - C.K.W.A.C.M. HELICOPTERS

OPERATORS - B. SHERMAN PASS - SHIRLEY (ADMIN)  
- H. FULLER  
G. WILKINS

ACTION TAKEN FLIGHT - FIVE LK6 SOUTH TO CANTON  
BIRCH PASS NORTH TO STERON MOUNT (DRAINAGE AND  
BIRCH PASS)

WILDLIFE - GRIT - 111  
- ELK - 21  
- GRIZ - 1 (W. MOUNTAIN BASIN)

WEATHER: CHAS. / COOL

GROUND CONDITIONS: GENERALLY SNOW FREE - SNOW ON NORTH/NORTH EAST SLOPES

NOTES AND RECOMMENDATIONS

URS INVOLVED FRIGHT 3.0 HRS / MAN HOURS 16.5

INVESTIGATING WARDEN (S) B. R. SHERMAN



OCCURRENCE REPORT

PARKS CANADA WARDEN SERVICE

TO NOTE \_\_\_\_\_

SUBJECT WILDLIFE - ALBUKA (CANSAS) - CMT

DATE OCT 13 / 83 8:30 - 16:00 HRS.

LOCATION OF INCIDENT BANK TRUSS - MITCHELL RANGE - MT SIMON MHC

PERSONS INVOLVED

NAME	ADDRESS	PHONE

DETAILS ANNUAL GLEET (CANSAS) - CIRCUMVENT HEBELIPTERS

CIBBERGERS B. SHLEBMAN Pass - (CHERYL) MONTIC  
H. FURBER  
C. WATKINS

ACTION TAKEN ALBUKA FLIGHT - BANK TRUSS, VERDANT VALLEY,  
MITCHELL RANGE, STANFORD RANGE

WILDLIFE - C/MT - 72  
- C/RT - 1  
- SHEE - 18  
- MULE - 4

WEATHER: PARTLY CLOUDY / COOL

GROUND COVER: CONSIDERABLE SNOW FREE - SNOW ON NORTH/NORTH EAST SLOPES

NOTES AND RECOMMENDATIONS

JURS INVOLVED FLIGHT 3.1 1423 / 1430 HOURS 21.0

INVESTIGATING WARDEN (S) B. R. Shleba



OCCURRENCE REPORT

PARKS CANADA WARDEN SERVICE

TO NOTE \_\_\_\_\_

SUBJECT WILDLIFE - ABTUM CENSUS - GREAT

DATE OCT 14 / 85 8.30 - 11.00 HRS.

LOCATION OF INCIDENT STANFORD ROAD

PERSONS INVOLVED

NAME	ADDRESS	PHONE

DETAILS ANNUAL GYFT CENSUS - CHRONOLOGICAL METROPTER

OBSERVERS - B. SHEPHERD P. S. S. - MANA (ADAMS)  
H. FURNER  
G. WATKINS

ACTION TAKEN ABTUM FLIGHT - SIMILAR BIRN - AREA  
CHECKED IN - SURVEY CANCELLED - METR 1 HR

WILDLIFE - GREAT 4  
 - SHEEP 10  
 - CALVE 3

WEATHER: CLEAR / COOL - CLOUD LAYER 7,800 FT. AT FLIGHT.

START - SEEN DROPPED  
 GROUND CONDITIONS: SNOW COVERED ABOVE 6,500 FT - OBSERVATION DIFFICULT

NOTES AND RECOMMENDATIONS

JURS INVOLVED FLIGHT 1.5 / METROPTER (9.5 + 9 [DROPTIME]) 18.5

INVESTIGATING WARDEN (S) B. Shepherd



OCCURRENCE REPORT

PARKS CANADA WARDEN SERVICE

TO NOTE \_\_\_\_\_

SUBJECT WINDMILL - AERIAL CENSUS - G/AT

DATE OCT 15/83 11:30 - 15:00 HRS.

LOCATION OF INCIDENT STANFORD - BRUCE RANGE

PERSONS INVOLVED

NAME	ADDRESS	PHONE

DETAILS FILIT AERIAL CENSUS - OROVIAN HELICOPTERS

(ROBERTS, B. SHELLMAN, PASS: GEORGE (STREETS))  
G. WATKINS

ACTION TAKEN FR FLIGHT OF MT SIMONIZ - KIMPTON PASS  
STODDART CREEK - BRUCE RANGE - LUNAR PASS

WINDMILL - G/AT - 15  
 - G/AT - 4 (LUNAR PASS) 3 CUBS  
 - WIND - 11  
 - SHLE - 74

WEATHER PARTLY CLOUDY / COOL  
GROUND CONDITIONS SNOW ON MANY OF ACTIVE AREAS - OBSERVATION DIFFICULT AT TIMES

NOTES AND RECOMMENDATIONS

JURS INVOLVED FLIGHT 3.3 HRS / WINDMILLS 15.0

INVESTIGATING WARDEN (S) B.R. Sheehan



APPENDIX C

FINANCIAL REPORTS



PARCS CANADA  
HOOPERAY NATIONAL PARK  
PO BOX 220  
NADIUM, B.C.  
VOA 1A0

933 - H32612

27/10/83

14-1-064568-0000-00

1

FLIGHT DATE	FLT RPT NO	TYPE OF A/C	A/C REG	HOURS
11-10-83	531774	BELL 206	GEHE	3.7
TOTAL HOURS				3.7
				=====

TARIFF CHARGES

BELL 206	-	3.7 HRS @	\$450.00/HR TARIFF RATE	1,665.00
** TOTAL		3.7 HRS **		
				=====

GAS & OIL CHARGES

OIL	3.7 HRS @	\$1.00/HR	\$3.70	
FUEL	92.5 GALS @	\$2.11/GAL	\$195.18	
** TOTAL GAS & OIL **				198.88

Authority (P.O. <input checked="" type="checkbox"/> Contract <input type="checkbox"/> Material <input type="checkbox"/> .....
Invoice compared with description of goods price — discount <input checked="" type="checkbox"/>
Received in full or by purchase order <input checked="" type="checkbox"/>
Invoice verified <input checked="" type="checkbox"/>
Processed by Commitment Unit



INVOICE TOTAL: 1,863.88 \*\*

TERMS OF PAYMENT ARE NET 30 DAYS FROM DATE OF INVOICE, INTEREST AT 2.0% PER MONTH (COMPOUNDED MONTHLY) WILL BE CHARGED ON OVERDUE INVOICES

REPORT



PARKS CANADA  
KOOTENAY NATIONAL PARK  
PO BOX 220  
NADIM, B.C.  
VOA 1ND

933 - H32613

27/10/83  
DAY MONTH YEAR

14-1-064568-0000-00

K3491-83-0653

1

FLIGHT DATE	FLT RPT NO	TYPE OF A/C	A/C REG	HOURS
12-10-83	531775	BELL 206	GBHE	4.4
13-10-83	531777	BELL 206	GBHE	4.3
14-10-83	531779	BELL 206	GBHE	1.5
15-10-83	531780	BELL 206	GBHE	3.3
TOTAL HOURS				13.5
				=====

TARIFF CHARGES

BELL 206 - 13.5 HRS @ \$450.00/HR TARIFF RATE 6,075.00  
 \*\* TOTAL 13.5 HRS \*\*

GAS & OIL CHARGES

OIL 13.5 HRS @ \$1.00/HR \$13.50  
 FUEL 337.5 GALS @ \$2.11/GAL \$712.14  
 \*\* TOTAL GAS & OIL \*\* 725.64

NOV - 1 1983  
 COPIES TO STICKER



INVOICE TOTAL: 6,800.64 \*\*

TERMS OF PAYMENT ARE NET 30 DAYS FROM DATE OF INVOICE, INTEREST AT 2.0% PER MONTH (COMPOUNDED MONTHLY) WILL BE CHARGED ON OVERDUE INVOICES

s Parcs  
da Canada

Serial No. - N° de série

**A 0046**

**AIRCRAFT CHARTER AUTHORIZATION FORM**

**FORMULE D'AUTORISATION D'AFFRÈTEMENT D'UN AÉRONEF**

Req'n N°

**K R3491-83-0653**

1. Issuing Officer (please print) - Agent autorisé (écrire en lettres moulées) <b>D/L/ Pick - Superintendent</b>		2. Date <b>07/10/83</b>		3. Financial Coding - Code financier <b>9675-2530-95020-101-1635 3</b> <b>9675-2532-05000-101-1635</b>	
4. Project (fire) No. - N° de la mission ("feu")		5. Aircraft Company - Compagnie aérienne <b>Okanagan Helicopters Ltd.</b>		6. Based at - Située à <b>Banff, Alberta</b>	
7. To supply services of - Pour offrir des services de <b>Ball 406 Helicopter</b>		8. Registration - Enregistrement <b>FCQE</b>		9. Rate per hour/mile - Taux: heure/mille <b>450.00/hr.</b>	
10. Purpose of Flight - But du vol <b>Wildlife Study</b> <b>Slingshot to Warden Patrol Cabins and Fay Hut</b>				11. Flight Ticket(s) No.(s) - N°(s) du(des) billet(s) de vol.	
12. Estimated cost - Coûts estimatifs <b>\$8540.00</b>		13. Signature of Issuing Officer - Signature de l'agent qui a délivré le formulaire <b>Section 25</b> Date <b>07/10/83</b>			

**ITINERARY - ITINÉRAIRE**

14. Date	From - De	To - À	Passenger Names/Freight - Nom(s) des passagers/cargaison
1/10/83	Great Divide	Floe Lake	B.R. Sheehan, Hans Fuhrer, G. Watkins
2/1	Floe Lake	Wardla	
3/10/83	Ball Pass	Settler's Road	
14/10/83	Settler's Road	Luxor Pass	

15. Fuel Oil Supplied by: - Combustible/huile fournie par <input type="checkbox"/> Department - Ministère <input checked="" type="checkbox"/> Carrier - Transporteur		16. Location - Endroit	17. Amount of Fuel - Quantité de combustible
--	--	------------------------	--

**INSTRUCTIONS TO CARRIER - INSTRUCTIONS AU TRANSPORTEUR**

- Supply copy of flight ticket to individual who issued this form.
- Receipts to accompany invoice for all surcharges (meals excepted).
- When waiting charges are assessed, departure and arrival times must be shown on flight ticket to substantiate charges.
- Invoices in quadruplicate with this form attached are to be forwarded to: (enter address of Paying Office).
- This tender is accepted subject to the rates, terms and conditions of the carrier's tariff filed with the Air Transport Committee and authority is hereby given for provision of the services specified.
- Remettre un exemplaire du billet de vol à la personne qui a autorisé l'affrètement.
- Les reçus doivent accompagner les factures pour tous les frais excédentaires (sauf pour les repas).
- Les temps d'arrivée et de départ doivent être indiqués pour justifier les frais d'attente.
- Les factures (en quatre exemplaires) et le présente formule doivent être envoyées à: (inscrire l'adresse du bureau chargé de payer les frais).
- La présente offre est acceptée sous réserve des taux et des modalités du tarif du transporteur, déposé auprès du Comité des transports aériens. Les services susmentionnés sont par les présentes autorisés.

Signature of Carrier's Agent - Signature de l'agent du transporteur <b>Date 07/10/83</b>	Signature of Authorized Officer - Signature de l'agent autorisé <b>Date 07/10/83</b>
---	---

20. Remarks - Observations <b>The Superintendent</b> <b>Wapiti National Park</b> <b>Box 220</b> <b>LELUM HOT SPRINGS; B/C/ VOA-1MO</b>	21. Surcharges - Frais excédentaires	23. Amount - Montant
	22. Invoice No. - N° de la facture	24. Invoice Total - Total de la facture

25. Certified pursuant to Section 25 of the Financial Administration Act - Certifié en vertu de l'article 25 de la Loi sur l'administration financière Name (Print) - Nom (Majuscules) Title - Titre	26. Certified pursuant to Section 27 of the Financial Administration Act - Certifié en vertu de l'article 27 de la Loi sur l'administration financière Name (Print) - Nom (Majuscules) Title - Titre
---	---

Signature	Date	Signature	Date
-----------	------	-----------	------