

PROJECT OPERATIONAL PLAN FOR THE
2000 BERING SEA CRAB RESEARCH TEST FISH PROGRAM:
BRISTOL BAY RED KING CRAB PROJECT

by

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and

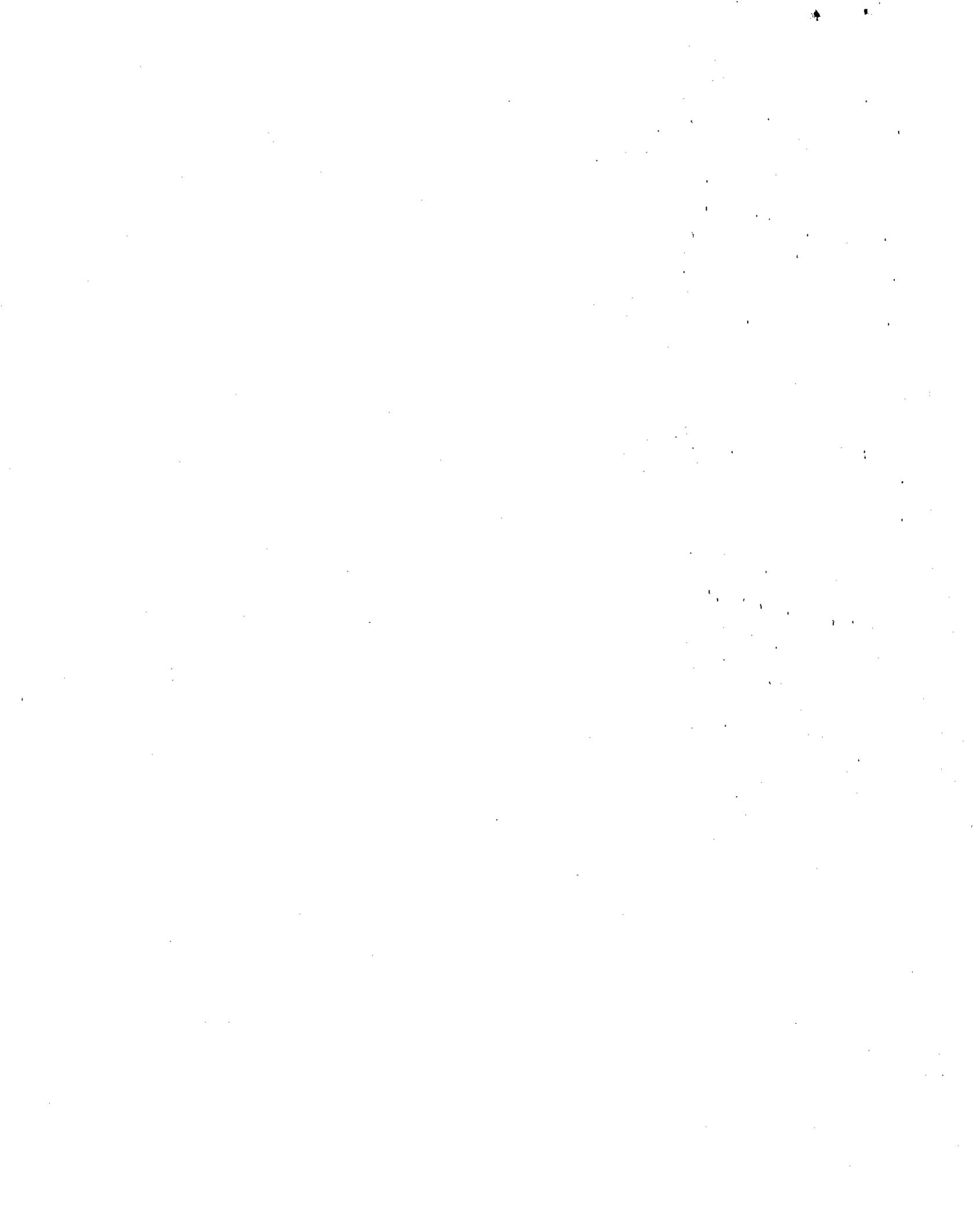
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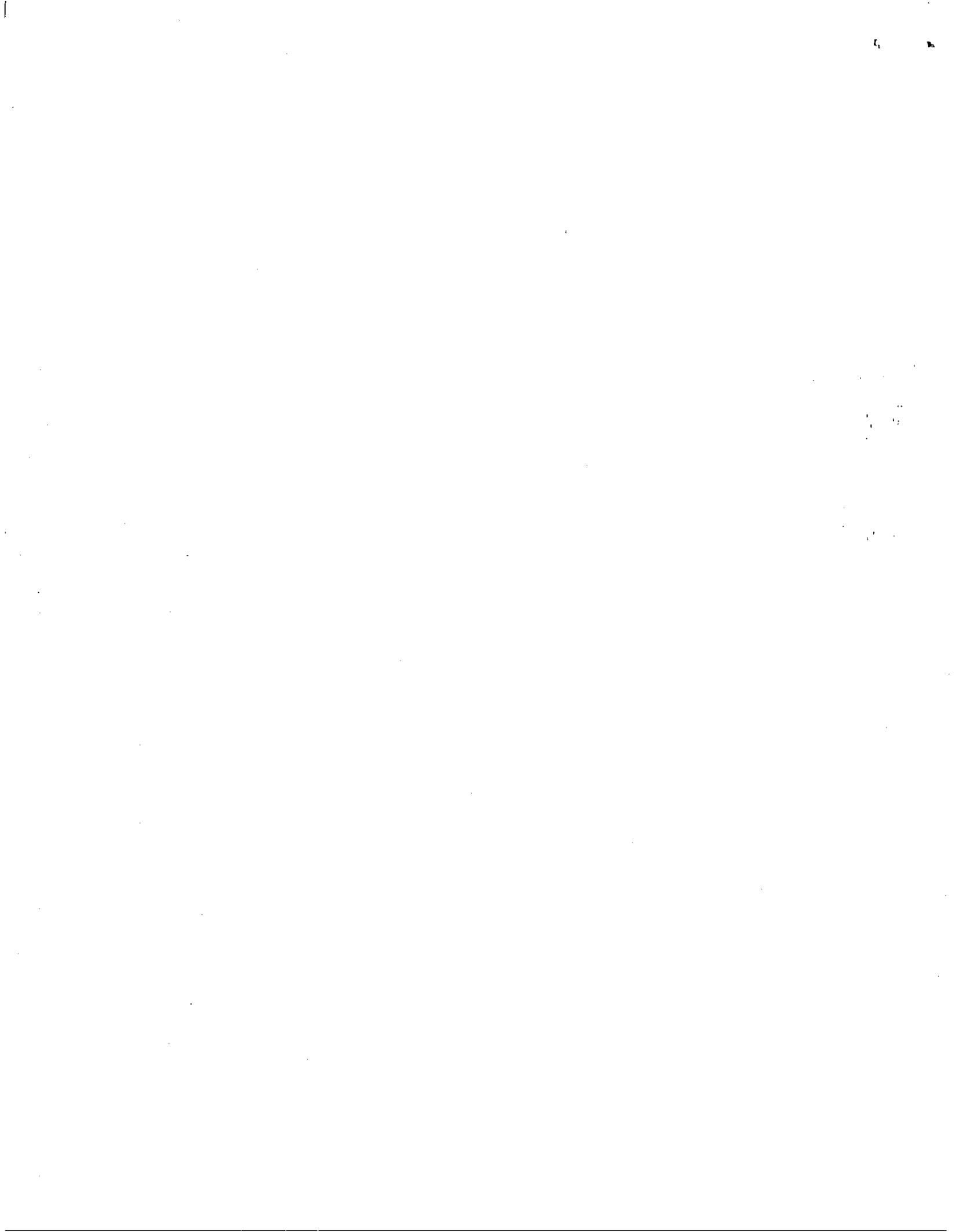
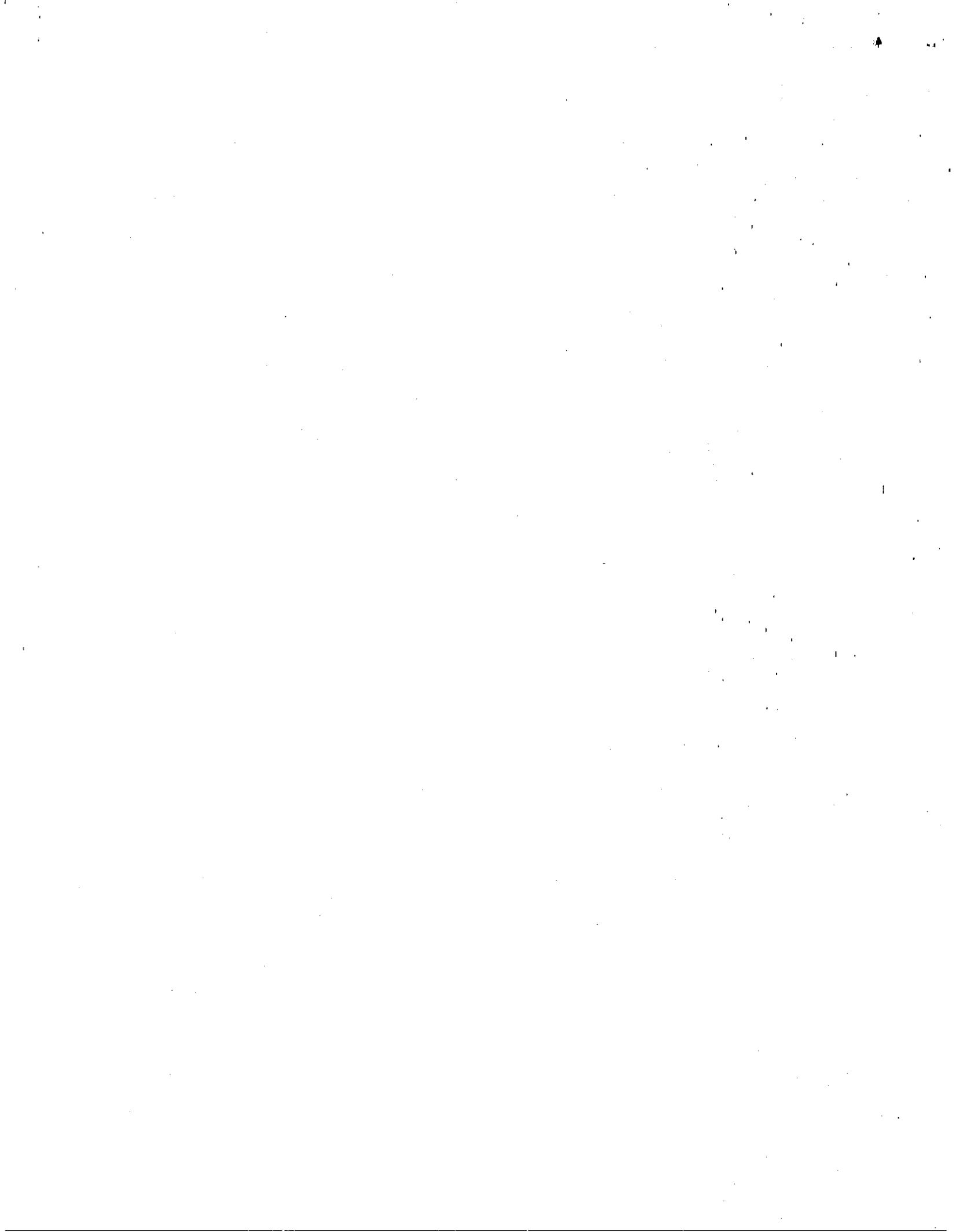


TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES.....	i
LIST OF FIGURES.....	i
LIST OF APPENDICES.....	i
FOREWORD.....	1
ABSTRACT.....	2
INTRODUCTION.....	3
OBJECTIVES.....	4
METHODS.....	4
Charter Itinerary.....	4
Cost-Recovery Fishing.....	4
Catch Sampling.....	5
Handling Injury Study.....	5
Study Area and Design.....	5
Injury Description and Application.....	5
Tagging and Release Method.....	6
Catch Sampling.....	6
Underwater Video Observations.....	7
Tag Recovery.....	7
Data Analysis.....	7
SCHEDULES AND PERSONNEL.....	8
REPORTS.....	8
LITERATURE CITED.....	9
TABLES.....	12
FIGURES.....	14
APPENDIX.....	16



LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Major and minor body injuries and rates observed in pot samples during the 1997 and 1998 Bristol Bay red king crab open access commercial fisheries (Tracy and Byersdorfer 2000).....	12
2. Limb injuries by leg type and location for 5,793 adult male red king crabs studied by Niwa and Kurata (1964) to examine the incidence of leg injury, loss and regeneration.....	13

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. General location of the 2000 Bristol Bay red king crab at-sea handling injury study and cost recovery fishing.....	14
2. Hypothetical deployment pattern for stations containing control and treatment pots fished during the at-sea injury study planned for the 2000 Bristol Bay red king crab charter.....	15

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
A. FY01 Yellowbook for the Bering Sea Crab test fish program.....	17
B. Shipboard Instructions for the 2000 Bristol Bay Red King Crab Test Fish Charter.....	19
C. 2000 Bristol Bay red king crab tag recovery instructions for dockside samplers and shellfish observers.....	132



**ALASKA DEPARTMENT OF FISH AND GAME
COMMERCIAL FISHERIES DIVISION
PROJECT OPERATIONAL PLAN**

Title: *Project Operational Plan for the 2000 Bering Sea Crab Research Test Fish Program: Bristol Bay Red King Crab Project.*

Yellow Book Project No(s): *TF-785 (Appendix A)*

Project Leader: *Douglas Pengilly* **PCN:** *11-1202*
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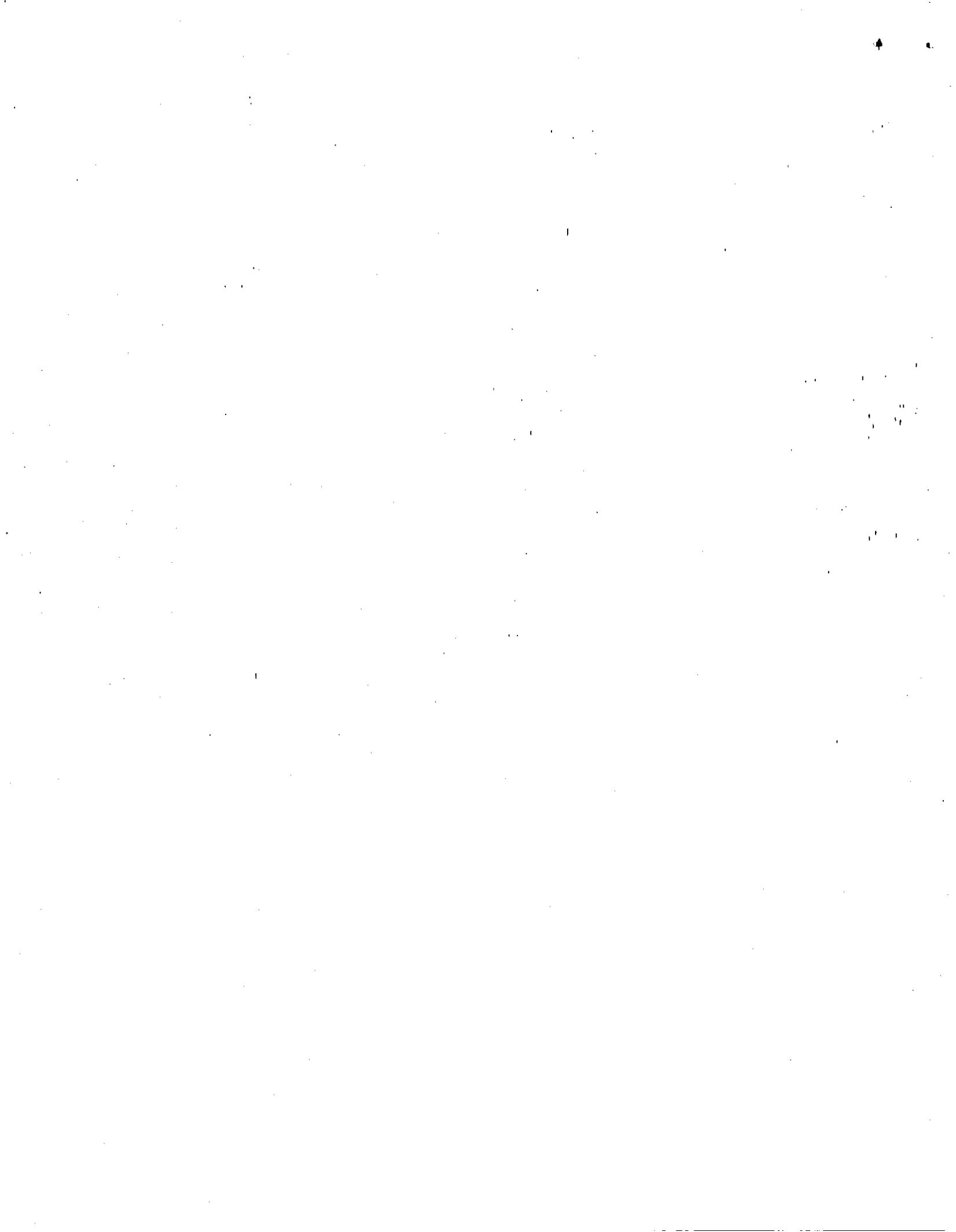
Date Submitted: *September 15, 2000*

Region: *Westward*
Fishery Unit: *Bering Sea/Aleutian Islands Crab*
Fishery: *Bristol Bay Area T Red King Crab*
Fishery Management Plan: *Fishery Management Plan for the Commercial King and Tanner Crab Fisheries in the Bering Sea/Aleutian Islands*

File Name: *G:\ALLUSE\Skip\2000\2000BB_POP.doc*

APPROVALS

Level	Signature	Date
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Research Supervisor:	_____	_____
Regional Supervisor:	_____	_____
Headquarters' Receipt:	_____	_____
Headquarters' Recommendation:	_____	_____
Further Review:	_____	_____
Approval:	_____	_____



FOREWORD

Funding for this project is authorized by the State of Alaska under the Test Fish Program (AS 16.05.050 (15)), and more specifically, the Alaska Department of Fish and Game (ADF&G) Bering Sea Crab Research Test Fish Project (BSTF). Initiated in 1990, the principal objective of the BSTF has been focused on population dynamics and fishing effects on Bristol Bay red king crabs. Studies of Norton Sound red king crab, Aleutian Islands golden king crab, and St. Matthew Island blue king crab stocks have also been funded under the BSTF program; most recently, a portion of the Aleutian Islands golden king crab stocks were surveyed July – August 2000 (Watson and Gish 2002). Operational plans for previous Bristol Bay BSTF projects are documented Tracy and Pengilly (1996 and 1997), Tracy et al. (1999 and *in press*), Watson and Pengilly (1992, 1993a, 1993b, 1994, 1996), and Watson et al. (1995). Operational plans for other Bering Sea/Aleutian Islands test fishery project surveys are itemized in Tracy et al. (1999). The program budget is itemized in Appendix A.

ABSTRACT

This report describes the operational plan for the 2000 Bristol Bay red king crab *Paralithodes camtschaticus* project: a pilot study on the effects of two types of handling injuries commonly observed during commercial fishing. A description of the objectives, study area, handling injury study design, tagging procedures, sampling methods, data analysis and reporting, and the comprehensive tag recovery effort are given. The Alaska Department of Fish and Game (ADF&G) will conduct the tagging project aboard the chartered F/V *Shaman* (a 41.9-m crabber) in the Bristol Bay king crab registration area. The tag recovery effort will be conducted by ADF&G in Dutch Harbor, Akutan, King Cove and Kodiak, and by at-sea observers.

INTRODUCTION

The economic importance of the Bristol Bay red king crab *Paralithodes camtschaticus* fishery is significant, with the recent dockside value of harvests averaging \$45 million annually (Morrison et al. 1999). During commercial fishing operations significant numbers of captured female and non-retainable male crabs may be subjected to handling prior to discard. Catch-per-unit-effort (CPUE) of non-target red king crabs varies annually; CPUE of females was 28 crabs and CPUE of sublegal males was 21 crabs in 1998 (Moore et al. 2000a). The CPUE of legal males averaged 17 crabs during the same year. By contrast, legal male CPUE averaged 12 crabs during the most recent fishing seasons (Moore et al. 2000b).

Lethal and sublethal effects attributable to handling of bycatch crabs have been identified as a potential factor influencing stock productivity for a number of species (Kruse 1993). Studies designed to describe and quantify injury types and effects in Bering Sea/Aleutian Islands king crab fisheries have been conducted both at-sea and in laboratory settings. Urban (1987) evaluated handling-induced injuries of male and female red king crabs during the 1986 Bristol Bay commercial fishery and reported an overall injury rate of 3.2% among 6,732 crabs examined. Leg injuries or autotomies were the dominant injury type at 67.8%, compared to rates of around 10% each for chelae, rostrum and carapace injuries. Long-term mortality was not addressed within the scope of the study, although results suggested further investigation of the survivorship of crabs with crushed-leg injuries versus those with autotomized limbs, whether or not crushed legs were later autotomized, and the long-term impacts of commonly observed rostrum injuries. At-sea examination in 1992 of 981 Bristol Bay male red king crabs subjected to handling practices identical to those occurring during the commercial fishery indicated that carapace spine and rostrum damage were much more prevalent (71.9%) than leg injuries (28.1%) (Stevens and MacIntosh 1993).

Results from an at-sea observer study in 1997 and 1998 to describe and quantify handling-induced injury rates of female and sublegal male red king crabs during commercial fisheries in the Bering Sea indicated that 12.4% of the 6,874 crabs examined had at least one injury (Tracy and Byersdorfer 2000). Injuries identified were categorized by anatomical reference and classified as either 'major' or 'minor' based on the presence or absence, respectively, of soft tissue visible at the injury site, which was defined to include punctures, cracks and other types of shell damage. Leg autotomies were classed as minor injuries since crabs are known to drop limbs during combat or to escape predators, with self-cauterization of the resulting wound. Of the injured crabs 16.5% sustained major injuries and 83.5% had minor injuries (Table 1). The most common major injury observed was leg damage (55%) while damage to the rostrum was the most frequently observed minor injury (56%).

To estimate mortality and other effects on red king crabs resulting from leg and rostrum damage, we will conduct an at-sea handling study applying each injury to tagged crabs and analyzing recovery rates during subsequent commercial fishing seasons. This operational plan describes a 22 day vessel charter in Bristol Bay to conduct the at-sea tagging study along with underwater video camera observations, and an intensive tagged crab recovery program during the 2000 and 2001 Bristol Bay red king crab fisheries. Cost-recovery fishing will also be conducted during the vessel charter to offset expenses for the study, the follow-up tag recovery program and other research activities.

OBJECTIVES

Prioritized objectives of the 2000 Bristol Bay red king crab test fish project are as follows:

1. Catch approximately 13,340 legal-sized male red king crabs (≥ 6.5 inches carapace width) for delivery to Royal Aleutian Seafoods in Dutch Harbor on September 27, 2000.
2. Determine if two artificially inflicted injuries affect the short-term recovery rate of tagged legal male red king crabs in the 2000 Bristol Bay commercial fishery. A second objective is to estimate the longer-term reduction in recapture rates of tagged crabs inflicted with each injury type from tag recoveries in the 2001 Bristol Bay commercial fishery.
3. Underwater video observations will be obtained on at least two occasions. These observations will be of uninjured crabs and those with each treatment to qualitatively assess any differences in behavior and viability between groups and among crabs with and without tags.

METHODS

The 22-day cruise will be conducted aboard the chartered vessel F/V *Shaman* from approximately September 20 to October 13, 2000 in Bristol Bay Management Area T. The charter will begin and end in Dutch Harbor, with four crew, and two onboard ADF&G staff for cost recovery fishing, and two additional staff during the at-sea injury study. The general location of cost recovery fishing and at-sea research is shown in Figure 1.

Charter Itinerary

The first seven charter days will be directed at harvesting cost-recovery crabs for delivery and sale at Royal Aleutian Seafoods in Dutch Harbor, although additional charter days will be utilized as necessary to achieve this objective. Approximately 15 days will be devoted to the at-sea injury study.

Cost-Recovery Fishing

Cost-recovery fishing goals for the 2000 test fishery are equivalent to the expense of the vessel charter, survey costs and other Bering Sea shellfish management and research projects within the fiscal year. The total cost of FY01 test fish projects is \$489,100. The cost-recovery harvest necessary to attain this goal equals approximately 13,340 legal-sized male red king crabs at an estimated average weight of 6.3 pounds. If the cost-recovery goals are not attained during the allotted 7 days, the charter vessel will continue fishing for this purpose until sufficient crabs have been harvested.

Offloading of the catch will be monitored and sampled for size distribution by ADF&G staff to ensure accurate accounting of crabs for fish ticket documentation and correct payment to the State of Alaska.

Catch Sampling

Fishing statistics such as catch date, location, and CPUE of legal-sized male red king crabs will be recorded for each cost-recovery pot. Additionally, up to 20 randomly selected cost recovery pots will be sampled each day to determine legal status, sex, size, and shell age distribution of red king crabs and other commercially important shellfish species. Detailed catch sampling instructions and data forms are provided in "Shipboard Instructions for the 2000 Bristol Bay Test Fishery Charter" (Appendix B).

Handling Injury Study

Study Area and Design

The study area will be generally located where legal male red king crabs are concentrated in commercial quantities as indicated during cost recovery fishing. Tagging will commence on the first day pots are pulled and will continue until all available tags have been distributed. Tagged crabs will be at liberty for approximately 5 to 18 days prior to the opening on October 15, 2000 of the Bristol Bay red king crab commercial fishery. Approximately 3,000 legal-sized male red king crabs, tagged at a maximum rate of 30 crabs per pot of either control (uninjured), leg injured or rostrum injured, will be released from a minimum of 33 stations.

Each tagging station will consist of three pots spaced 1/8 (0.125) nmi apart laterally according to a predetermined random order and along an geographically arbitrary linear path, as long as the distance between individual strings is no less than 1/4 (0.25) nmi (Figure 2). Catches of legal-sized red king crabs in each of the grouped three pots will be categorized as the control (uninjured crabs), treatment injury Type '1' (crabs with a crushed leg), and treatment injury Type '2' (crabs with broken rostrums).

Individual pot locations, set and pull dates, and CPUE of legal-sized male red king crabs will be recorded by the charter vessel captain on a "Pilot House Log" (see Appendix B.4. Form 1 and Form 2) for all fishing conducted during the study.

Injury Description and Application

Only legal-sized male red king crabs with no obvious external injuries, including broken rostrums, new leg injuries and previously autotomized legs, will be selected for each of the study groups. Techniques employed for inflicting injuries on crabs in each of the treatment groups will be standardized to ensure uniform results. Injury types and general methods of application to treatment groups are as follows:

Type 1 – Leg-Crush Injury. This treatment will simulate a crushing injury to the merus (leg section) that may occur when crabs are brought aboard commercial fishing vessels and legs are caught between the pot frame and fixed structures. A crushing injury that results in compressed

and/or cracked legs, if severe enough, can result in leg autotomy. The short-and long-term effects of such an injury on crab vitality and viability are unknown; however, perforating exoskeleton injuries are known to promote chitinoclastic bacterial infections in king crabs (Sindermann 1990).

Study results and anecdotal information suggest that, in Bristol Bay red king crabs, the propodus or the distal section of the leg is prone to crushing injury. The anatomical site for the Type 1 injury will be the propodus of the third right walking leg for crabs in this treatment group. Studies by Niwa and Kurata (1964) showed this leg to sustain a higher rate of injury than other legs, including the chelae (Table 2). The injury will be applied by using a hand tool (such as channel-lock pliers or Vice Grips®). The device will be adjusted to a gap width or pressure setting appropriate to cause a uniform compression injury across the mid-point of the propodus parallel to the dorso-ventral plane (i.e., the top and underside of the leg). The selected leg, propodus and correct injury site are illustrated in Appendix B.7. Modification of the method and severity of the injury may be altered if crabs autotomize the selected leg prior to being released, or if crab viability appears poor immediately following application of the treatment as described.

Type 2 – Broken-Rostrum Injury. This treatment will simulate breakage of the rostrum that may occur when crabs in pots brought aboard commercial fishing vessels impact hard surfaces during removal. Tracy and Byersdorfer (2000) found that rostrum injuries are the most common minor injury observed in the Bristol Bay red king crab commercial fishery (Table 1). Although Zhou and Shirley (1995) found minimal short-term effects on crabs exhibiting rostrum injuries, the long-term effects on viability remain unknown. As noted above, chitinoclastic bacterial infection may be a significant consequence of this injury type.

The anatomical site for the Type 2 injury will include the distal portion of the rostrum at approximately one-half of the total length (Appendix B.7). The injury will be inflicted by severing the rostrum at the specified location by use of a hand-cutting device (such as wire cutters). Modification of the method and severity of the injury may be altered if crab viability appears poor immediately following application of the treatment as described.

Tagging and Release Method

Study crabs will be tagged through the isthmus muscle using fluorescent yellow Floy spaghetti tags fitted with fluorescent orange tabs and locking metal sleeves as detailed in Appendix B.10. Tagged crabs will be released back into the water as close to the capture location as possible by direct placement in an upright position onto a low elevation inclined ramp leading to a ballast overflow trough.

Catch Sampling

All crabs selected for tagging will be shell-aged and measured for carapace length (CL) to the nearest millimeter (mm). Detailed catch sampling instructions and data forms are in “Shipboard Instructions for the 2000 Bristol Bay Test Fishery Charter” (Appendix B).

Underwater Video Observations

On at least two occasions, either during cost recovery fishing, the injury tagging study, or both, underwater video footage of uninjured crabs and those with each treatment will be obtained to qualitatively assess any differences in behavior and viability between groups and among injured and uninjured crabs with and without tags. An autonomous underwater time-lapse recording video system used for this purpose will be deployed in two pots seeded with a single crab from each study group over a fixed soak time interval of 48 hr. Seed groups for each deployment will consist of the following:

<u>Deployment #</u>	<u>Crab A</u>	<u>Crab B</u>	<u>Crab C</u>
1	no injuries – no tag	broken rostrum – no tag	damaged leg – no tag
2	no injuries – tagged	broken rostrum – tagged	damaged leg – tagged

Crabs in each seed group will be individually marked for identification during the video observations. Each of the seeded pots will have the tunnel openings tied shut to prevent escape of the subject crabs. Complete instructions for using the underwater video camera are in Appendix B.11.

Tag Recovery

Following completion of the at-sea study an intensive tagged red king crab recovery program will be carried out during the 2000 Bristol Bay commercial fishery. Daily catches aboard all catcher-processors and approximately 10 percent of participating catcher-only vessels will be monitored for tagged crabs throughout the season by at-sea observers. Additionally, ADF&G staff deployed at shoreside processors and observers deployed on floating processors will examine delivered catches for tagged crabs and interview vessel crews for recapture information. Fishing industry participation in the tag recovery program will be solicited by public notice through various media outlets, and tag recovery incentive rewards will be offered to vessel crews. When possible, all tagged crabs recovered will be measured, assessed for legal status and shell age, and the recapture date; location and depth will be documented. Tag recovery forms, instructions, and procedures for observers and dockside samplers are provided in Appendices B.4. (Form 4) and C.

Data Analysis

The effects of Type 1 and Type 2 injury treatments on red king crab mortality will be assessed by conducting the following analyses:

- 1) Test the hypothesis

$$H_0: R_t = R_c \text{ vs. } H_a: R_t < R_c, \text{ where}$$

R_t is the probability of a commercial fishery recovery of a Floy tag from a tagged legal crab released in either treatment Type 1 or Type 2 groups, and

R_c is the probability of a commercial fishery recovery of a Floy tag from a tagged legal crab released in the control group; and,

2) Estimate $C_{t,2000}/C_{c,2000}$ and $C_{t,2001}/C_{c,2001}$, where

$C_{t,i}$ is the catch rate during the year i commercial fishery for crabs tagged and released in either treatment Type 1 or Type 2, and

$C_{c,i}$ is the catch rate during the year i commercial fishery for crabs tagged and released in the control group.

Under the assumption that catch rates during fisheries are the same for all surviving crabs that were released from the same tagging station allows for estimation of survival rates. These survival rates are from the beginning of the year i fishery of crabs in the treatment groups relative to those in the control group.

Statistical comparisons of recovery rates will be performed within individual fisheries. Power of the tests performed will be contingent on the upon the recovery rates during each of the two consecutive seasons. Lower overall tagged crab recovery rates expected during the 2001 fishing season might result in lower power of the test.

SCHEDULES AND PERSONNEL

Dates	Personnel	Activity
4/00-9/00	Tracy et al.	Project planning, vessel charter/other procurements, operational plan, shipboard instructions, survey staging activities.
9/00-10/00	Byersdorfer, Clark, Alinsunuran, Van Tamelen	Conduct 22 day coast recovery fishing and at-sea injury study.
9/00	Moore	Survey database application and design.
10/00	Chisum, Kochuten	Enter survey data electronically.
10/00	Moore et al.	Initiate tag recovery program prior to commercial fishery (at-sea observers/dockside samplers).
10/00-12/00	Byersdorfer	Edit and compile survey data, complete survey summary report.

REPORTS

Date	Author(s)	Report
9/00	Tracy et al.	Project Operational Plan for the 2000 Bering Sea Test Fishery: Bristol Bay red king crab charter.
12/00	Byersdorfer	A summary of biological data collected during the 2000 Bristol Bay red king crab charter.
06/01	Watson et al.	Effects of injury on recovery rates of tagged red king crabs in the 2000 Bristol Bay commercial fishery.

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Table 1. Major and minor body injuries and rates observed in pot samples during the 1997 and 1998 Bristol Bay red king crab open access commercial fisheries (Tracy and Byersdorfer 2000).

Injury Severity Class and Type	Observed Injury Rate (%)		Overall Injury Rate	
	Within Severity Class		No.	%
	1997	1998		
Major				
Leg	62.8	52.1	88	9.0
Carapace	16.3	14.6	24	2.5
Chela	14.0	14.5	23	2.4
Other	7.0	18.8	25	2.6
Total	100.0	100.0	160	16.5
Minor				
Rostrum	49.5	58.3	453	46.7
Carapace	14.0	9.4	86	8.9
Leg	10.7	10.6	86	8.9
Chela	10.3	2.5	37	3.8
Leg/Chela Autotomy	10.7	17.5	127	13.1
Other	4.7	1.7	20	2.1
Total	100.0	100.0	809	83.5

Table 2. Limb injuries by leg type and location for 5,793 adult male red king crabs studied by Niwa and Kurata (1964) to examine the incidence of leg injury, loss and regeneration.

Location	Leg Type			
	Cheliped	1st walking leg	2nd walking leg	3rd walking leg
Right side	315	589	719	1,370
Left side	211	591	692	1,306
Total	526	1,180	1,411	2,676

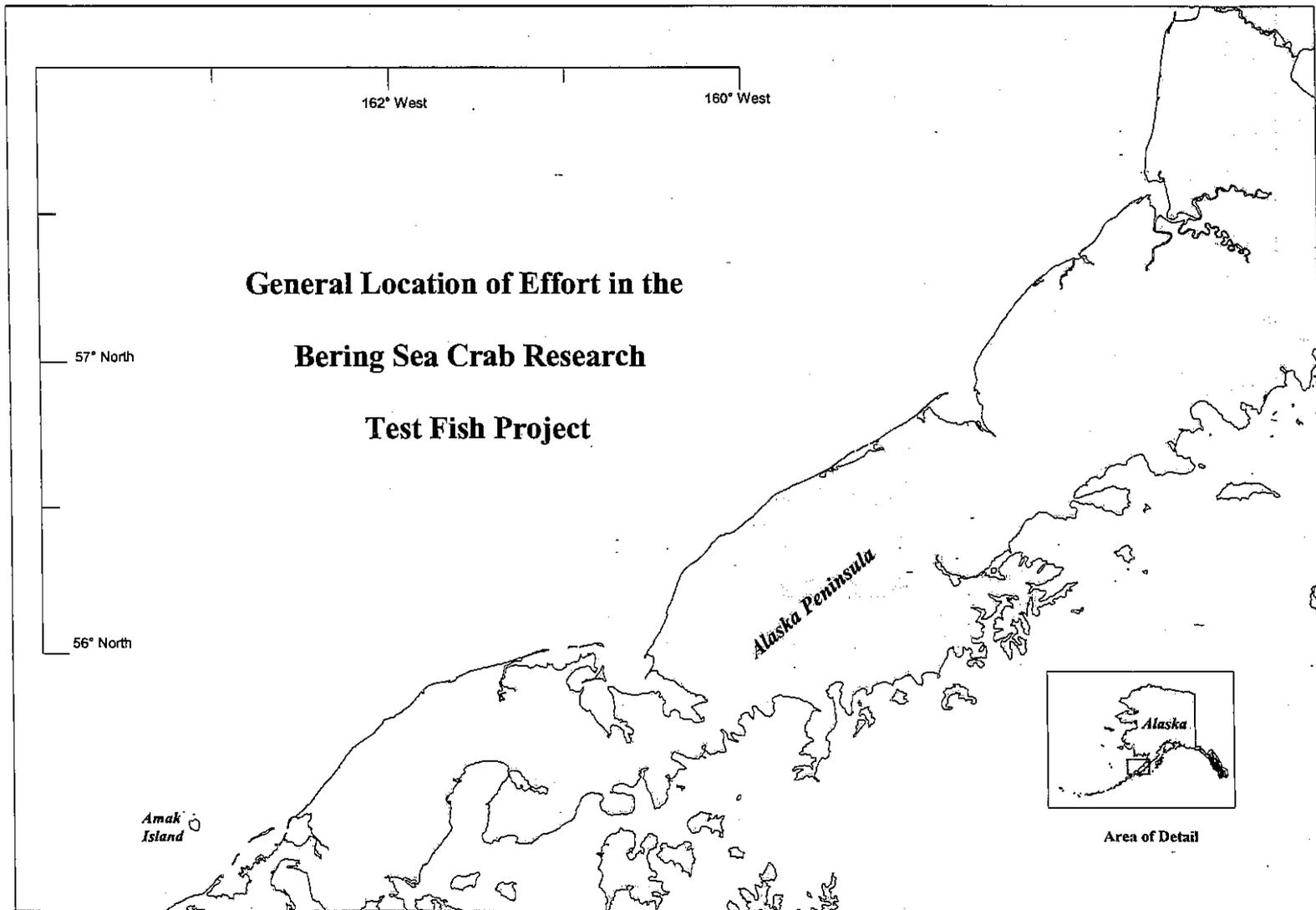


Figure 1. General location of the 2000 Bristol Bay red king crab at-sea handling injury study and cost-recovery fishing.

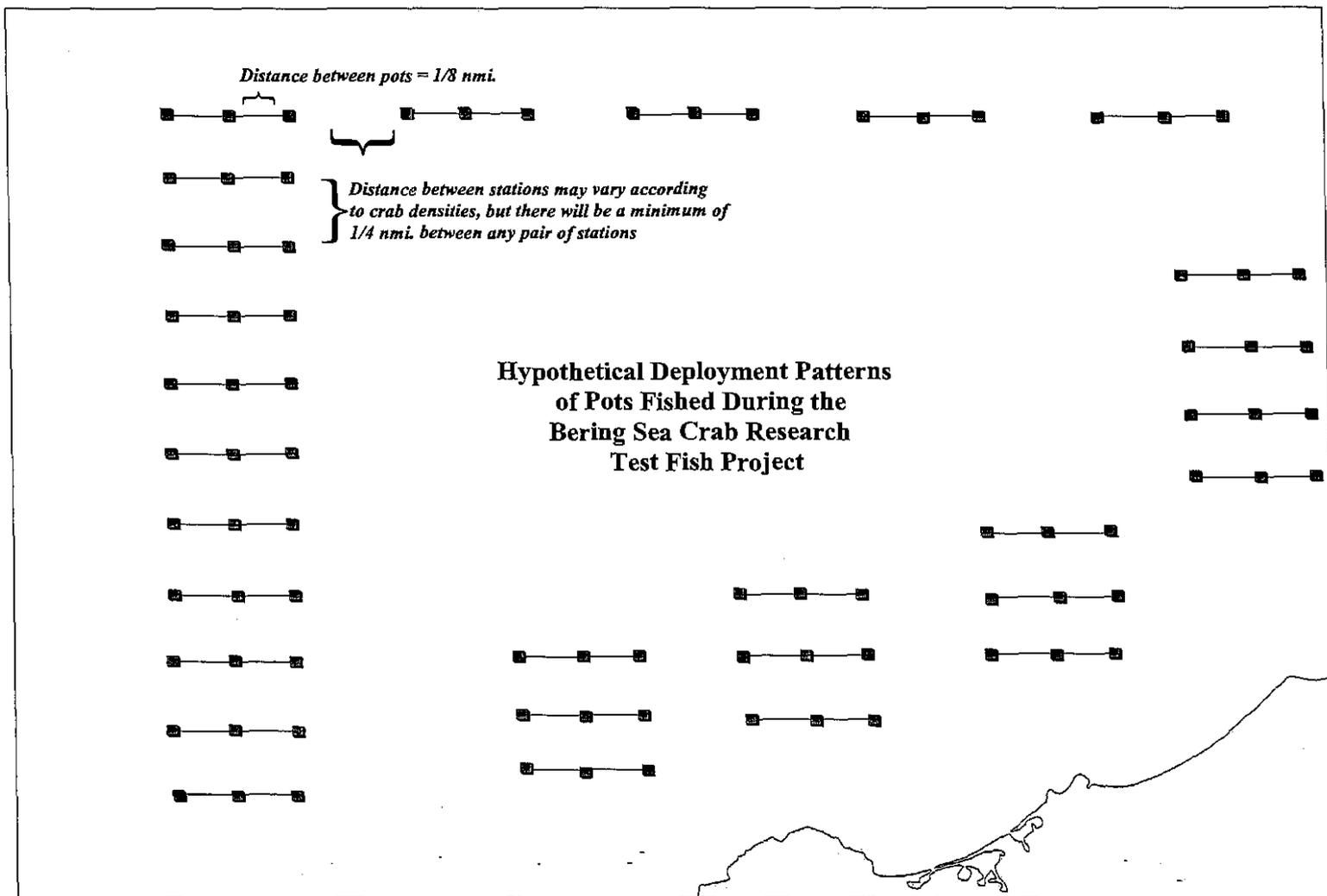
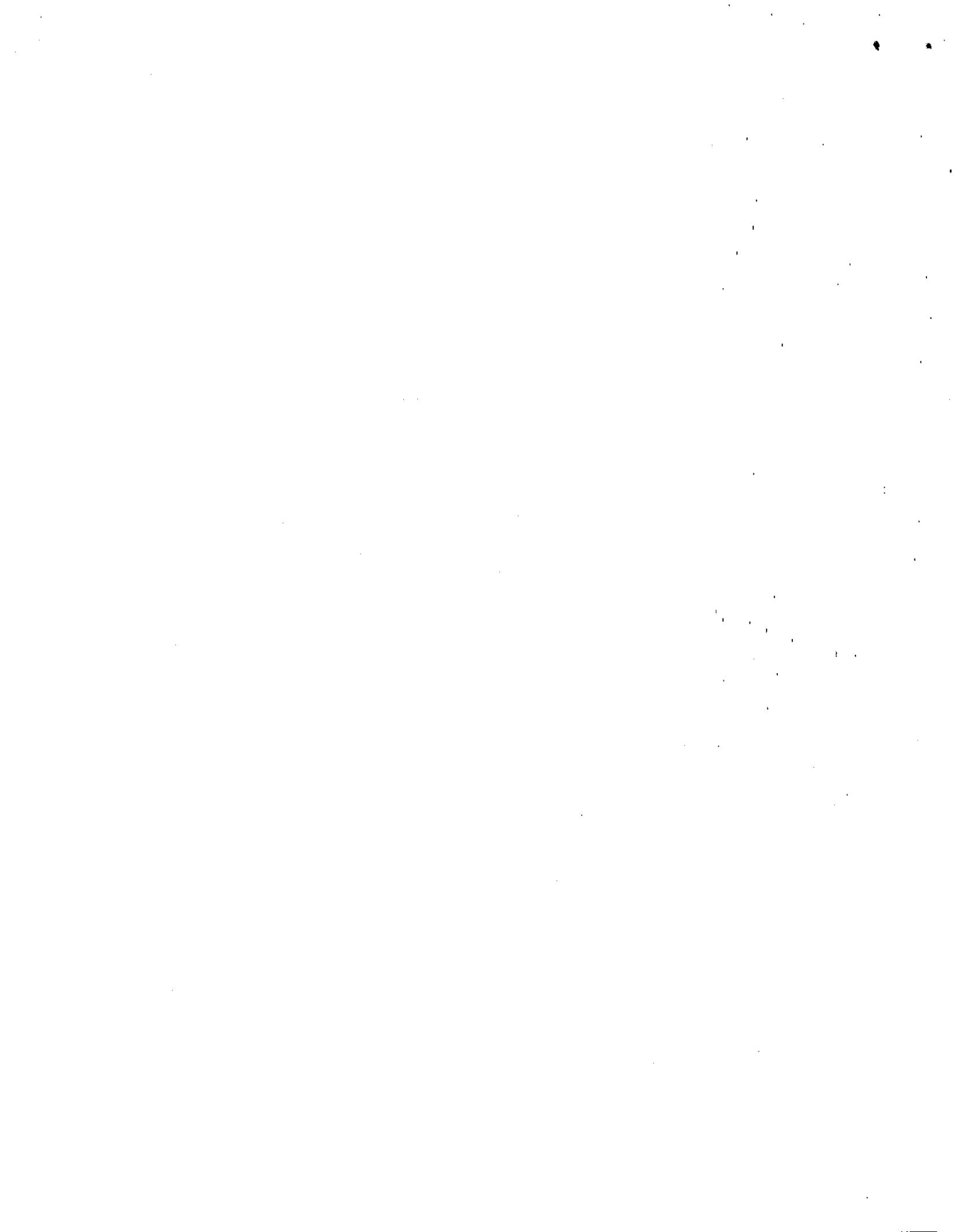


Figure 2. Hypothetical deployment pattern for stations containing control and treatment pots fished during the at-sea injury study planned for the 2000 Bristol Bay red king crab charter.



APPENDIX



Appendix A. FY01 Yellowbook for the Bering Sea Crab Research Test Fish Program.

PROJECT TITLE: Bering Sea Crab Research Test Fish Program PROJECT NUMBER: TF- 785
 FISHERY UNIT: Bering Sea/Aleutian Islands Crab REGION: IV
 COMPONENT: 400110100-Fish. Mgmt. BPS# _____ LEDGER CODE: 11100741-11147785
 SUBCOMPONENT: _____ LOCATION: Kodiak
 LEGISLATIVE DIST: 27 PROGRAM ELEMENT: Test Fish-funded project
 FISHERIES AFFECTED: Bristol Bay SPECIES AFFECTED: Red King Crab
 USER GROUPS AFFECTED: Bristol Bay Commercial Red King Crab, Vessel Owners, and
 Processing Industry

PROJECT DESCRIPTION

Funding for this project will support the state's expenses for conducting shellfish research projects in the Bering Sea and Aleutian Islands. The state's commercial shellfish fisheries in these areas have recently been valued in excess of \$300 million. Studies funded under this project provide a better understanding of species biology and the impacts of commercial fishing. Insight toward effective shellfish management policy is a major product of this project. Interim management measures and Alaska Board of Fisheries actions are oftentimes dependent on information obtained from studies funded through the Bering Sea Test Fishery. Additionally, Bering Sea/Aleutians Islands stock identification research also funded by this project would not otherwise be conducted.

PROJECT OBJECTIVES

Bering Sea / Aleutian Islands crab populations are assessed to provide information for development of harvest levels and fishery management policy. Data will be collected on all crab captured during the surveys. Survey results, experiment findings, and short and long term tag recovery data will provide information on stock parameters such as natural mortality and fishery harvest rates that can then be used to design management strategies meeting conservation and economic objectives established by the Alaska Board of Fisheries and North Pacific Fisheries Management Council, and outlined in the Magnuson-Stevens Fishery Conservation and Management Act Fishery Management Plan for Bering Sea / Aleutian Islands king and Tanner Crabs.

BUDGET MANAGER: Doug Pengilly, Fishery Biologist IV	PCN: 11-1202			
BUDGET DETAIL:	FY98	FY99	FY00	FY01
100 PERSONNEL SERVICES	115.2	175.0	149.4	171.4
200 TRAVEL	13.5	16.3	25.3	30.9
300 CONTRACTUAL	302.2	233.9	237.4	231.5
400 COMMODITIES	7.5	21.0	21.5	14.8
500 EQUIPMENT	10.0	13.0	25.5	10.5
700 GRANTS	0.0	0.0	0.0	0.0
PROJECT TOTALS:	448.4	459.2	459.1	459.1

Appendix A. (page 2 of 2)

Funding sources	FY98	FY99	FY00	FY01
FEDERAL RECEIPTS	0%	0%	0%	0%
GENERAL FUND	0%	0%	0%	0%
INTERAGENCY RECEIPTS	0%	0%	0%	0%
PROGRAM RECEIPTS	100%	100%	100%	100%
CIP FUNDS	0%	0%	0%	0%
STAFF MONTHS	30.0	14.5	12.0	23.7

PERSONAL SERVICES DATA:

PCN	R	S	LOC	R&S	NAME/TITLE	MM	----- Premium Hours -----					COST
							OT	SEA	HAZ	SWG	GRV	
1857	A	P	CAA	18 E	D. Tracy/FB III	0.0	0	46	0	0	0	10,692
1037	P	P	BKB	18 F	R. Morrison/FB III	0.0	0	35	0	0	0	10,711
1006	P	P	CAA	16 M	F. Blau/FB II	0.0	0	35	0	0	0	8,839
1117	A	S	CAA	14 J	S. Byersdorfer/FB I	7.0	0	24	0	0	0	42,713
1409	A	S	BKB	14 B	M. Schwenzfeier/FB I	5.0	0	46	0	0	0	33,109
1319	A	S	CAA	8 B	M. Rogers/ADC II	2.0	15	0	0	0	0	6,751
1428	P	S	CAA	14 K	L. Watson/FB I	9.0	0	12	0	0	0	52,173
1825	P	S	CAA	12 K	K. K. Phillips/FWT III	0.0	15	0	0	0	0	544
1603	A	S	CAA	12 A	vacant/FWT III	0.7	45	0	0	0	0	3,965
5020	A	S	AWA	16 A	P. Van Tاملen	0.0	0	12	0	0	0	1,854
PERSONNEL TOTALS:						23.7	75	210	0	0	0	171,352

PROJECT LINE ITEM DETAIL:

LINE#	DESCRIPTION	AMOUNT	COMMENT
72240	Field travel	20.0	travel for field activities and agency, industry and Board of Fisheries meetings
72500	Per Diem/Other costs	10.9	travel per diem
73000	Charters/Other	231.5	vessel charters, printing, telephone, freight and storage
74520	Commodities	14.8	tags and tag rewards, misc. publications, personnel training, and misc. expendables
75690	Misc. Equipment	10.5	misc. scientific equipment, computers
TOTAL LINES 200-700:		287.7	
TOTAL PROJECT COST:		459.1	

Appendix B. Shipboard Instructions for the 2000 Bristol Bay Red King Crab Test Fish Charter.

Alaska Department of Fish and Game
Westward Region
211 Mission Road
Kodiak, Alaska 99615

August 2001

TABLE OF CONTENTS

	<u>Page</u>
LIST OF APPENDICES	21
GENERAL INFORMATION	22
Safety Briefing.....	22
Radio Schedule.....	23
Charter Itinerary	23
Miscellaneous Shipboard Rules and Reminders.....	24
PROJECT OBJECTIVES.....	25
METHODS AND PROCEDURES.....	25
Cost Recovery Fishing and Catch Deliveries	25
Payment for the Vessel Charter	27
Pilot House Logs	27
Catch Reporting.....	27
Tag Study Design.....	29
Catch Sorting, Sampling and Tagging.....	29
Tagging Procedures.....	31
Underwater Video	31
Ancillary Data Collections.....	32
APPENDIX	34

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
B.1. Contract between the State of Alaska and the <i>F/V Shaman</i>	35
B.2. Excerpts from the AMSEA Cold Water Safety and Survival Manual	61
B.3. Radio Schedule and Catch Reporting Log	75
B.4. Data Forms	77
B.5. Bristol Bay Red King Crab Test Fish Charter Cost-Recovery Catch of Legal Crabs Per Pot Pull, 1997 - 1999	86
B.6. Tag Study Random Pot Category Assignments	120
B.7. Illustration of Handling Injury Site Placement	123
B.8. Equipment List	124
B.9. Procedures for Selecting Sample Pots	126
B.10. Floy Tagging Procedures	127
B.11. Instructions for Handling and Operating the Autonomous Underwater Video Recorder System	129

GENERAL INFORMATION

The purpose of this manual is to provide instructions and information relating to the 2000 Bristol Bay red king crab test fishery. Refer to it for project objectives and sampling procedures. Expect standard methodologies to remain constant, but be prepared to accept changes to sample protocols when circumstances warrant.

This year's project will be conducted aboard the chartered vessel the F/V *Shaman*. The vessel and crew have been contracted to provide charter service to ADF&G for the 23-day period beginning on September 20 and ending on October 12. The provisions and specific service requirements of the charter contract, provided in Appendix B.1, should be referenced whenever necessary to avoid any misunderstandings arising between the vessel captain and ADF&G.

Following is a list of personnel embarking on the test fishery charter vessel:

ADF&G Crew	Crew of the F/V <i>Shaman</i>
Susie Byersdorfer - crew leader	Dan Matsen – vessel captain and owner
Kevin Clark - biologist	vessel engineer – to be named
Peter Van Tamelen – biologist	deckhand – to be named
Rachel Alinsunurin – biologist	deckhand – to be named

Safety Briefing

Prior to commencement of the charter the captain will provide the ADF&G crew with a shipboard safety orientation, which will at least include pulling the general alarm, the designation of emergency stations, and where to convene in case of an emergency. Specific information and/or procedures will be reviewed for each of the following:

1. Shipboard Safety Drill: Where personnel should be and what to do in emergency situations; the location of survival suits and EPIRBs. A surprise drill will also be held to test the ability of all crew members and ADF&G personnel to don survival suits and assist others do the same.
2. General Vessel Orientation: The location of fire stations, medical supplies, emergency information/safety placards, and safe/hazardous areas on deck will be specified.
3. Vessel Rules: Where the rain gear and boots are stored; galley etiquette, water use policy (showers, laundry, dishes, bathroom), etc.

At all times during the charter the safety and well being of both the vessel and ADF&G crew is paramount. Obey the captain in this regard, as he is legally responsible for ensuring the safety of all onboard personnel. Do not go on the back deck or anywhere outside alone, especially when seas are rough. When the gear is being worked, pay attention to buoy lines and trailers, slick decks and pots. ADF&G personnel will not stack pots, operate hydraulics, or throw buoy lines. Be aware of the crane and hydraulic blocks at all times, particularly when pots are being moved. Retreat to a safe area previously designated by the captain while pots are being set, retrieved, moved or stacked.

Prior to departure, each ADF&G crewmember will check their survival suit, lubricating or waxing the zipper to ensure proper operation. Tested EPIRBs and strobes should be securely attached to survival suits. Call the US Coast guard in Dutch Harbor (581-3466) for rules on testing to check personal EPIRBs. Refer to the attached AMSEA Cold Water Safety Manual (Appendix B.2) for the proper technique to don survival suits and disembark from the vessel while wearing one.

Radio Schedule

A radio schedule will be maintained between the vessel and the Dutch Harbor ADF&G office during each day of the charter. The crew leader, designated ADF&G crew member, or vessel captain will relay a daily summary of stations fished and legal-sized crabs tagged as outlined on the Radio Schedule and Catch Reporting Log (Appendices B.3 and B.4, Form 5). However, the first priority of each day's radio report will be to check-in and verify the well being of the vessel and crew. Holly Moore will be the primary contact in the Dutch Harbor office, followed by Kathleen Herring and Larry Boyle. The daily radio check-in will be at 10:00 a.m., although if this schedule is missed a 2nd check-in will occur at 2:30 p.m. The prioritized single side band frequencies used to contact the Dutch Harbor ADF&G office (Call sign: WIM 76) are SSB 4125 and 4146. On days that attempts at radio communication fail, with the captain's permission the Dutch Harbor office may also be contacted via satellite communications by using the character sequence address 626 45 34.

Charter Itinerary

The tentative itinerary established for the 2000 test fishery is as follows:

Date	Activity
9/20	depart Dutch Harbor/travel to grounds
9/21	travel to grounds/set cost recovery gear
9/22	set/pull cost recovery gear
9/23	set/pull cost recovery gear
9/24	set/pull cost recovery gear
9/25	set/pull cost recovery gear
9/26	set/pull cost recovery gear
9/27	pull cost recovery gear/set tag study strings/travel to Dutch Harbor
9/28	travel to Dutch Harbor/deliver cost recovery crabs/return to grounds
9/29	return to grounds/pull tag study strings
9/30	set/pull tag study strings
10/1	set/pull tag study strings
10/2	set/pull tag study strings
10/3	set/pull tag study strings
10/4	set/pull tag study strings
10/5	set/pull tag study strings

-Continued-

Charter Itinerary - continued.

Date	Activity
10/6	set/pull tag study strings
10/7	set/pull tag study strings
10/8	set/pull tag study strings
10/9	set/pull tag study strings
10/10	set/pull tag study strings
10/11	pull tag strings/travel to Dutch Harbor
10/12	travel to Dutch Harbor and offload gear

Miscellaneous Shipboard Rules and Reminders

During the charter the crew leader will delegate tasks and responsibilities to the other onboard ADF&G staff. Any perceived problems relating to the attainment of daily work objectives should be channeled through the crew leader. Be sure to clean up all work areas used, including the galley table. Try and keep data forms neat and as dry as possible during sampling and organize all completed forms in chronological sequence. On a daily basis, ensure that the deck paperwork tracks with the pilothouse logs completed by the vessel captain, since a unique sequential number enabling data cross-referencing will be assigned to every pot fished. Although it is the crew leader's responsibility to maintain data quality control and integrity, (s)he will depend upon the other ADF&G crew for assistance.

Completed data forms will be edited daily. This practice ensures that the often-important short-term details of the day's events are not overlooked. There will be no compromise with regard to this responsibility. If time permits, the vessel pilothouse logs will be entered into a spreadsheet daily using the laptop computer.

Prior to the vessel's departure from Dutch Harbor, check off all items on the 'Equipment and Supply List' provided in Appendix B.8. Pay special attention to the supply of data forms, on deck sample equipment and personal gear (e.g., seasick medication and survival suits). During the charter all sampling equipment such as calipers, clipboards, measuring sticks, etc. must be securely stored inside the vessel (and not left out on deck) at the end of each day. Keep a daily log of work hours and activities, but also note observations of rare or unusual marine life, recoveries of tagged crabs, sampling irregularities, etc.

Offer assistance to the vessel crew whenever possible. When time permits the ADF&G crew should help out with fishing activities that aren't inherently dangerous, such as filling and emptying bait containers. Offers should routinely be made for washing dishes, making coffee, etc. During the tedium of fishing and sampling a cooperative effort toward maintaining comfortable living conditions can be a great benefit to everyone's morale.

There will be no home packing and no subsistence or sport fishing allowed during the charter. However, while at-sea it is acceptable to consume mortally injured crabs, cod and other groundfish,

except halibut (dead or alive) which will be placed overboard immediately. There will be no retention of cod by the vessel crew for bait, unless used entirely for the purpose of fishing study or cost-recovery pots. Only the crew leader may authorize collection of crabs for display or other purposes.

Additional misc. instructions/reminders:

1. Leave timesheets with Kathleen Herring in Dutch Harbor or Sharon Stewart in Kodiak.
2. Leave CFEC cards with Holly Moore.
3. Check your survival suit and EPIRP prior to departure.
4. Review the survey itinerary.
5. Questions regarding the vessel charter contract may be resolved by consulting with the crew leader and by reviewing the contract in Appendix A.
6. Leave all receipts for purchases with Holly Moore.
7. If there are no forms to record data, make them up.
8. The Pilot House Logs must be completed at the end of each day.
9. Enter values in every column on all data forms as required.
10. Be careful and have fun.

PROJECT OBJECTIVES

Prioritized objectives of the 2000 Bristol Bay red king crab test fishery are as follows:

1. **Cost Recovery.** Catch approximately 13,340 male red king crabs (84,040 pounds) ≥ 6.5 inches carapace width (CW) for delivery to Royal Aleutian Seafoods on or around September 28, 2000.
2. **Handling Injury Tag Study.** Conduct a mark-recapture experiment using Floy tags to examine short term (< 15 days) and long term (> 1 year) mortality of red king crabs resulting from injuries commonly inflicted during handling in the commercial fisheries.
3. **Catch Sampling.** Sample catches in randomly selected pots during cost-recovery fishing for species composition, red king crab size distribution and other biological characteristics.

METHODS AND PROCEDURES

Cost-Recovery Fishing and Catch Deliveries

Cost-recovery fishing goals for the 2000 test fish project are based on the need to offset the expense of the vessel charter and tag study as well as costs for additional Bering Sea shellfish management and research projects within the current fiscal year. The total FY01 expenses for test fish funded projects equal \$489,100. Royal Aleutians Seafoods has agreed to pay \$5.82 per pound for male red king crabs ≥ 6.5 inches, which results in a cost-recovery harvest of approximately 84,040 pounds (or 13,340 crabs at an average weight of 6.3 pounds). If possible an additional 250 crabs ≥ 6.5 inches

will be retained to offset potential deadloss. At an estimated catch of 20 crabs per pot (based on cost recovery catch rates during the 1999 test fishery), a total of 667 pot lifts will be required to meet the 2000 cost-recovery harvest goal.

Cost-recovery fishing location(s) will be determined by the vessel captain and the ADF&G crew leader based upon the captain's fishing experience, the identification of areas where high catch rates of legal-sized crabs occurred during previous test fish surveys, and results of the annual EBS crab stock assessment surveys conducted by NMFS. Location of pots with a catch of 20 or more legal crabs from cost-recovery fishing between 1997 and 1999 are provided in Appendix B.5. Two quarts of chopped herring and, when available, hanging bait will be used in cost recovery pots.

Every crab retained for cost recovery will be measured with a 6.5" stick. Ideally, there will be just a single delivery of crabs made during the entire 23-day charter. However, if the cost recovery objectives are not achieved during the charter days reserved for this purpose, directed fishing for retainable crabs will continue as needed. Royal Aleutian Seafoods will purchase all legal-sized crabs harvested during the test fishery, even if multiple deliveries are made.

Fish Ticket for Cost Recovery Deliveries

If Holly Moore is unavailable to complete the paperwork for the delivery of crabs to Royal Aleutian Seafoods, the crew leader will assume responsibility for conducting this transaction.

NOTE: The sales transaction of cost-recovery crabs in no way involves the F/V Shaman or the vessel captain. During offloading of the catch a designated ADF&G staff member will verify and record the weight of every brailer of cost recovery crabs transferred to the processing facility. Additionally, counts of crabs will be obtained from at least 6 brailers per delivery in order to calculate the average weight of the catch (Appendix B.4, Form 6). At least 100 crabs will be measured during each delivery for biological and legal size by an either ADF&G crew member or dockside sampler. To complete the sales transaction with the processor, complete the fish ticket by bringing the CFEC card to the processor's business office and record information required for the fish ticket as follows:

- In the "Vessel Name" field, record 'ADF&G-Kodiak 2000 Bering Sea Test Fishery'; **DO NOT WRITE THE CHARTER VESSEL NAME OR ADF&G NUMBER ANYWHERE ON THE TICKET.**
- Compute the average weight of the crabs and record the appropriate proportion of the catch by weight and number of animals for each statistical area fished.
- Weigh or estimate any deadloss from the delivery and record on the ticket using the appropriate species code.
- Verify the poundage, and the price agreed upon in the processing contract, and re-check all information on the fish ticket for accuracy before signing it. **DO NOT SIGN THE FISH TICKET BEFORE RECEIVING PAYMENT IN-FULL FOR THE TOTAL POUNDAGE OF DELIVERED CRABS (remember, the State of Alaska is tax-exempt).**

Ensure the payment check is made out to: State of Alaska, 211 Mission Road, Kodiak, Alaska 99615.

Any disagreement with the processor over the cost recovery settlement can be resolved by contacting Holly Moore or the test fish crew leader.

Payment for the Vessel Charter

Before disembarking the vessel following completion of the charter, verify with the captain the total days of charter service provided to ADF&G under the terms of the contract and request that an invoice for the appropriate amount owed to the contractor be mailed or faxed to Christy Nielsen at the Kodiak HQ office (211 Mission Road, Kodiak, AK 99615; fax: (907) 486-1824).

Pilot House Logs

During both cost recovery fishing and the tag study the vessel captain will need to complete daily catch and effort logs using the 'Pilot House Log – Cost Recovery Strings (Appendix B.4, Form 1), and the 'Pilot House Log – Tagging Strings (Appendix B.4, Form 2). The crew leader (or designated ADF&G staff) must ensure that all columns on each of the logs are accurately completed, especially the 6.5" RKC Retained column for legal-sized red king crabs retained for sale during cost-recovery fishing. A sequential number will be assigned to each string set, beginning at '1' and ending with the number that reflects the total strings fished during the charter. Accordingly, the sequential number sequence initiated for cost recovery strings will be continued (rather than duplicated) for strings fished during the tag study. Likewise, each pot within strings will be assigned a sequential number in the order the gear is set (e.g., string number '1' could have sequential pot numbers 1-10, string number '2' sequential pot numbers 11-20, etc.), the last of which will also reflect the combined total number of cost recovery and tag study pots pulled by conclusion of the charter.

Maintaining an accurate record of sequential pot numbers is extremely important, since each links the pot location, depth fished and soak time to the corresponding catch data. On each occasion cost recovery pots are sampled, the ADF&G crew will ask the captain to confirm (via the loud hailer) the appropriate sequential pot number before the pot comes aboard so it can be recorded and subsequently cross-referenced. Sequential numbers for lost pots will be recorded on both the pilothouse logs and catch sample forms, accompanied by the words 'LOST POT' written in the corresponding row. Similarly, if a retrieved pot is unbaited, the sequential pot number is still recorded and the words 'NO BAIT' written on the form

Catch Reporting

At the end of each day of cost recovery fishing, the retained catch must be tallied from the pilot house logs and recorded along with the updated cumulative catch on the 'Cost Recovery Daily and Cumulative Catch Record' (Appendix B.4, Form 5). On the following day during radio schedule these figures must be discreetly reported to the Dutch Harbor ADF&G office, using the code sheet provided in Appendix B.3.

In addition to the retained catch tallies, a daily log should be kept of activities, dates, and any miscellaneous observations, Floy tag recoveries, problems, total tagged crabs, etc.

Tag Study Design

Pot Deployment

Objectives of the tagging study will be attained by categorizing catches of legal-sized crabs from pots systematically deployed for this purpose. Selection of the area fished for the study will be based on the location of the highest relative density of legal crabs identified during cost-recovery fishing. Shortly prior to the return trip to Dutch Harbor for delivery of cost recovery crabs, a total of four strings of 30 pots each grouped in sets (or "stations") of three will be deployed, spaced at 1/8 (0.125) nmi intervals both within and between each group. The geographic orientation of the string and three pot stations pots may be arbitrary as long as the 1/8 nmi distance between pots is maintained. For tagging purposes, individual pots at each station within strings will be categorized by random assignment so the corresponding catches of legal-sized male red king crabs can be designated as the experiment control or treatments. Randomly assigned pot categories by station for up to 12 strings are provided in Appendix B.9. Following retrieval of the initial strings set, identical string configurations will be re-set in the same or different area(s) of high legal-sized crab density, until either the charter period ends or the available supply of tags are exhausted.

Soak times for tag study pots can be variable so long as a sufficient soak is allowed for maximizing catch rates of legal-sized crabs. Although bait used in tag study pots also need not be standardized, at least one-gallon of frozen, chopped herring and, when available, fresh cod (or other allowable hanging bait) will be used.

Tagging Categories

Up to 30 legal-sized crabs from each of the three pot categories at each station will be tagged and released as either the experiment control or one of two treatments. Crabs selected for tagging must be carefully scrutinized to ensure all are free of any obvious external injuries (including broken rostrums and new leg injuries) and previously autotomized legs (including chelae). Diseased crabs, with undiminished vitality resulting from this condition are suitable for tagging, although all crabs with poor vitality (as determined by little or no response to stimuli) should be discarded. The condition of crabs in the control group and those in each of the treatment groups will be as follows:

<u>Category</u>	<u>Condition of tagged crabs</u>
Control	no injuries
Treatment 1	crushed third, right walking leg
Treatment 2	broken rostrum

Inflicting Injuries for Treatment Groups

Techniques employed for inflicting injuries on crabs in each of the treatment groups must be standardized to ensure uniform results. Accordingly, all Treatment 2 injuries will be inflicted by using a cutting pliers (or the cutting edges of a needle-nosed pliers) to sever the rostrum at its base. Treatment 1 injuries will be inflicted on crabs by crushing the third segment of the third, right walking leg using a fixed-gap channel lock or "vice-grips" pliers. The proper gap width will be determined by experimenting with legal-sized crabs of various carapace lengths captured during cost recovery fishing. **NOTE: Procedures used for determining the gap width must be fully**

documented for future reporting of study results. An illustration of correct placement for injuries inflicted for each of the treatments is provided in Appendix B.7.

Catch Sorting, Sampling and Tagging

Catches of retained crabs (≥ 6.5 inches) will be tallied from every pot pulled during both cost recovery fishing and the tag study. The crew leader will ensure that the captain records this data in the appropriate column on the pilothouse log. In addition, during each day of cost recovery fishing a goal of 20 pots will be selected for catch sampling. Refer to Appendix B.9 to review procedures for randomly choosing pots for this purpose. Record all required data (species, sex, CL or CW, legal or sublegal (juvenile), shell age, egg clutch conditions, etc. on the 'Crab Survey Data Form' (Appendix B.4, Form 4) according to protocols outlined below.

Recording Data for Cost Recovery Catch Samples

When a pot comes aboard, divide the catch of all crabs by species, and if possible subdivide by sex. **Separate data sheets** must be used for each species, although separate sexes of the same species may be recorded on the same sheet, delimited by leaving a blank row in-between each. Before sampling each pot, complete all header information (i.e., date, string number, buoy letters/numbers, measurer, recorder) and record the sequential pot number on the crab survey data form. Once sampling has commenced, record the appropriate code for each data category using the choices provided at the bottom of the form. Carapace length (CL) measurements to the nearest millimeter will be taken for all king crabs, and any hair crabs captured, from the posterior margin of the right eye socket to the midpoint of the rear margin of the carapace. Carapace width (CW) measurements will be taken to the nearest millimeter for Tanner and snow crabs, consisting of the straight-line distance across the carapace not including the marginal spines at a right angle to a line midway between the eyes to the midpoint of the posterior portion of the carapace. Extra care should be taken to obtain accurate carapace measurements. Legal-sized male red king crabs are those measured at ≥ 6.5 inches (≥ 165.1 mm) across the carapace outside the marginal spines. Because there is some overlap of sublegal and legal-sized males with the same carapace lengths, the legal measurement of all crabs less than 140mm CL should be verified by with either a measuring stick or calipers.

Crab shell age should be determined by examining the ventral side of the coxa (shoulders) of the walking legs (pereopods) for discoloration and deterioration from scratching and other abrasive action attributable from prolonged contact with the substrate. Although the following categories were developed for shell age assessment of red king crabs, each can also be applied to other commercially important crab species encountered during the survey. Record shell age for each crab sampled as follows:

New-shell-pliable (code 0) - Coxa and ventral surface of exoskeleton shiny, not scratched or pitted. Legs easily compressed when pinched since legs contain little meat at this time. Exoskeleton is fragile and subject to breakage when handled or dumped from the pot. If carapace is removed, the gills will be translucent to light cream in color. Crabs estimated to have had new, pliable exoskeletons for approximately 1-3 months. (NOTE: Due to the annual molt timing for red king crabs inhabiting Bristol Bay waters normally occurring during mid to late Spring, very few crabs in this shell age category are likely to be encountered during the test fishery.)

New-shell (code 1) - Coxa and ventral surface of exoskeleton dull. Legs mostly full of meat, meri not easily compressed by pinching. If carapace is removed, the gills will be a light cream color. Includes all ovigerous females and those with matted setae.

Old-shell (code 2) - Distal portion of the ventral coxa is partially or totally covered with brown scratches or dots. Legs are full of meat, meri are not easily compressed when pinched. If carapace is removed, gills will be tan in color due to fouling by microorganisms. Generally old-shell male red king crabs have retained their exoskeleton through a molt cycle ("skipmolt"). May have barnacles and other fouling marine organisms on the carapace.

Very old-shell (code 3) - Distal portion of ventral coxa densely covered with black scratches or dots. Legs full of meat, meri not easily compressed when pinched. Tips of dactyls are worn, rounded, and black. If carapace is removed, gills will be dark gray or gray-black in color due to fouling by microorganisms. Crabs failing to molt during consecutive growth cycles, sometimes referred to as "double skips." Frequently covered with barnacles or other fouling organisms.

Other biological characteristics of red king crabs that should be given special attention during sampling include the following:

embryo color - normally purple (code 2), but also brownish to tan (code 1) for uneyed eggs, while eyed eggs will typically appear less opaque;

embryo development (under the 'development' column) - uneyed eggs (code 1) should be commonly observed, although a significant percentage of clutches may also contain eyed eggs (code 2); hatching eggs (code 3) is the term used to describe a small clutch (1-29%) of eyed eggs interspersed with empty egg cases (or "matted setae") from hatched larvae;

parasites - "cottage cheese" disease (code 7) and "shell disease" (also known as "shell rust") (code 8) are normally the most commonly occurring diseases in red king crabs.

Recording Data for Tag Study Catches

When tag study pots are retrieved for sampling, separate and tally all legal-sized male red king crabs from the catch before selecting up to 30 crabs for tagging. Record the appropriate sample factor on the crab survey data form for pots containing more than 30 legal-sized crabs. The remaining catch contents need not be sorted, and should be released overboard immediately. Before sampling and tagging, verify the sample type (pot category) with the captain and complete all remaining header information (i.e., date, string number, buoy letters/numbers, measurer, recorder) and record the sequential pot number on the crab survey data form. Once sampling has commenced, record the appropriate code for each data category using the choices provided at the bottom of the form. Carapace length (CL) measurements will be taken for all crabs selected for tagging, and recorded along with shell age and any visible parasite infestation or disease.

Tagging Procedures

If time permits, a total of 3,000 legal-sized crabs (divided equally between the control and two injury groups) will be tagged during the study. Tagging procedures will be identical for crabs captured in control and treatment pots; **however, crabs from treatment pot categories will not be injured until tagged, and just prior to being released.** Record each tag number (including letter series) on the crab survey data form in the appropriate row. All crabs should be handled gently during sorting, measuring and tagging, and will be carefully released, one at a time, by use of a low, inclined ramp leading to a vessel scupper. (**NOTE:** It may be necessary to construct a suitable ramp for this purpose.) In order to maintain organization and avoid erroneous recording of duplicate tag numbers, every effort should be made to deplete the supply of tags by numerical order.

Complete procedures for placement and attachment of Floy tags on red king crabs are provided in Appendix B.10.

Underwater Video

The autonomous underwater video system will be deployed in at least 2 pots set aside for this purpose during cost recovery fishing, and, if time permits, also in at least two designated pots during the tag study. The primary objective of deploying the video system is to document the behavior and vitality of legal-sized red king crabs with and without injuries and with and without tags over a fixed soak time interval. For the 1st and 2nd deployment, as well as each consecutive set of two deployments, pots will be seeded with 3 crabs, each in the following condition:

<u>Deployment</u>	<u>Crab A</u>	<u>Crab B</u>	<u>Crab C</u>
1	no injuries – no tag	broken rostrum – no tag	damaged leg – no tag
2	no injuries – tagged	broken rostrum – tagged	damaged leg – tagged

Crabs in each of three groups per deployment must be visibly marked so individual identification is possible during the video observations. After seeding each pot, the inclined tunnel suspension ties should be cut and each of the loosened tunnels tied flush to the pot sidewalls. This measure will prevent seed crabs from escaping and also broaden the field of view available to the video camera. The time lapse recording program for all camera deployments will be sequenced as follows:

<u>target pot soak</u>	<u>recording interval</u>	<u>frequency</u>
48 hours	10 minutes	every 3 hours

Instructions for handling and operating the video system are provided in Appendix B.11. If needed, more comprehensive operating procedures are outlined in the MSC-1000 Autonomous Underwater Video System User's Manual. **Note: remember that prior to each deployment the system VCR format must be set in the LP (long play) mode and the 24-volt deep cell battery must be fully re-charged.** All footage taken will be recorded using both deep-sea lights outfitted with 50-watt bulbs. See the "Operating Instructions for the Sony GV-S50 Video Recorder/Monitor" for VCR format setting procedures. Manufacturers' booklets are also available for the battery charger and

each of the system components and accessories, and should be referred to for product specifications and use/maintenance guidelines.

Documentation

In order to document each deployment of the video system, all event programming sequences must be accurately recorded on the "Autonomous Underwater Video Recorder Event Sequence Worksheet" (Appendix B.4, Form 6). It will soon become apparent to the operator that this measure is necessary to successfully complete programming procedures.

In addition, each deployment should be further documented on the same or a separate log by noting the following information:

- the pot setting and retrieval date and time (from pilothouse logs), target pot soak time and general programming sequence;
- a brief description of the deployment results (successful/unsuccessful, problems encountered, changes made to component use/positioning, etc.).

Precautions

All pots selected for deployment of the video system are to be identified by the use or additional attachment of a trailer buoy painted with the letters "ADF&G RESEARCH", and properly outfitted with a "pot saver" device and appropriate time-lapse GTR. Pots containing the video system must be gently lowered to the ocean bottom by use of the pot hauling block and a 4-point bridle attachment. **Do not allow these pots to be placed overboard by traditional use of the pot launcher.** Be sure to consult with the captain and vessel crew in order to devise a suitable means of deploying camera pots.

Each time the video system is retrieved and not immediately re-deployed it must be cleaned of all marine detritus and thoroughly rinsed with fresh water to prevent corrosion. At all times during storage the system components (except the battery and frame) are to be stored in a dry and heated space. Be sure to review and follow other maintenance procedures in user manuals for individual components.

Ancillary Data Collections

Photo/Video Documentation

Whenever time permits, various fishing and sampling activities and other operational aspects of cost recovery and the tag study should be documented with photographs and video. More specifically, photographs of the following items and activities are needed:

random and treatment injuries – e.g., broken rostrums and damaged legs; autotomized legs, cracked, smashed and punctured carapaces;

injury mechanisms – e.g., both tag study treatments, pots falling on crabs, pots being dumped onto sorting table, crabs being tossed overboard, discarding crabs through scuppers ;

Catch-sorting methods - e.g., sorting table vs. totes, discard slides or ramps;

catch sampling – e.g., measuring techniques, comparative examples of shell ages and male/female crabs by species, egg clutch fullness and condition, parasites;

tagging – e.g., placement and attachment technique, tagged crabs in control group and each of the treatment categories.

Video footage of fishing, catch sampling and tagging operations should also be obtained whenever possible, as this provides the best means of documentation for future reference. Video footage should be inventoried with a short narrative (and photographs with a logbook description) of the subject matter or setting and the filming date.

Tagged Crab Recaptures

In 1991 and 1993 several thousand red king crab males were Floy tagged during the test fishery. The possibility exists that a small number of these crabs remain in the Bristol Bay population. In addition, there is some probability that crabs tagged for the injury experiment will be recaptured during the charter. When a tagged crab is captured, document all recovery information on ADF&G Tag Recovery Form (Appendix B.4, Form 3), including tag letter and number, carapace measurement, legal status and shell age. Also, note the sequential pot number so the capture location data can be referenced from the pilothouse logs. After sampling return all tagged crabs to sea as soon as possible.

Live Crab Weights

The live weights of up to 300 retained male red king crabs will be randomly collected during the delivery of cost-recovery crabs to Royal Aleutian Seafoods. Crabs selected for this purpose should be representative of the retained catch and, accordingly, sampling will be stratified over time and by the number of vessel live tanks being offloaded. In order to accomplish this goal, sample weights should be collected from a target of 25 crabs per each hour of offloading from each tank. Individual crab weights should be taken to the nearest gram, along with the carapace length and shell age. Record all data on the 'Retained Red King Crab Live Weight Form' (Appendix B.4, Form 6).

APPENDICES

Appendix B.1. Contract between the State of Alaska and the F/V Shaman.

RETURN THIS BID TO:
State of Alaska
Department of Fish & Game
Division of Administration
1255 W. 8th Street
P.O. Box 25526
Juneau, Alaska 99803-5526

THIS IS NOT AN ORDER

BID NUMBER: 11-001-01

DATE ITB ISSUED: 4-19-00

SEALED BIDS WILL BE RECEIVED IN SINGLE COPY AT THE ABOVE ADDRESS UNTIL 1:30 P.M. on 5-9-2000, AT WHICH TIME THEY WILL BE PUBLICLY OPENED.

DELIVERY LOCATION: SEE TEXT. DATE REQUIRED AT FINAL DESTINATION: SEE TEXT

F.O.B.: SEE ATTACHED

IT IS NOT NECESSARY TO RETURN THIS FORM IF YOU DO NOT WISH TO BID

BID TITLE: VESSEL CHARTER- BRISTOL BAY AREA T, RED KING CRAB

BIDDER'S NOTICE: by signature on this form, the bidders certify that: (1) the bidder has a valid Alaska business license and has written the license number below or has submitted one of the following forms of evidence of an Alaska business license with the bid; (a) a cancelled check for the business license fee; (b) a copy of a business license application with a receipt date stamp from the State's business license office; (c) a receipt from the State's business license office for the license fee; (d) a copy of the bidder's valid business license; (e) a sworn notarized affidavit that the bidder has applied and paid for a business license; (2) the price(s) submitted was arrived at independently and without collusion and that the bidder is complying with: (a) the laws of the State of Alaska; (b) the applicable portion of the Federal Civil Rights Act of 1964; (c) the Equal Employment Opportunity Act and the regulations issued thereunder by the State and Federal government; and (d) all terms and conditions set out in the Invitation to Bid (ITB). If any bidder fails to comply with (1) of this paragraph, the bid will be rejected. If any bidder fails to comply with (2) of this paragraph, the State may reject the bid, terminate the contract, or consider the contractor in default.

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CONTRACTING OFFICER:

Phone: (907) 465-4131 Fax: (907) 465-6181

DOES YOUR BUSINESS QUALIFY FOR THE ALASKA BIDDER'S PREFERENCE?

YES NO

SEE ITB FOR EXPLANATION OF CRITERIA TO QUALIFY.

COMPANY SUBMITTING BID: Mattsen Fisheries, Inc.

AUTHORIZED SIGNATURE: 

PRINTED NAME: Daniel R. Mattsen

STREET ADDRESS: 4324 N.E. Lokout Ln.

CITY, STATE, & ZIP: Poulsbo, WA 98370

PHONE NUMBER: (360) 697 2666 FAX NUMBER: (360) 697 2551

TAX ID#: 91-1314077

ALASKA BUSINESS LICENSE #: _____

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INSTRUCTIONS TO BIDDERS:

1. INVITATION TO BID (ITB) REVIEW: Bidders shall carefully review this ITB for defects and questionable or objectionable material. Bidders' comments concerning defects and questionable or objectionable material in the ITB must be made in writing and received by the purchasing authority at least ten (10) days before the bid opening date. This will allow time for an amendment to be issued if one is required. It will also help prevent the opening of a defective bid, upon which award cannot be made, and the resultant exposure of bidders' prices. Bidders' original comments should be sent to the purchasing authority listed on the front of this ITB.

2. BID FORMS: Bidders shall use this and attached forms in submitting bids. A photocopied bid may be submitted.

3. SUBMITTING BIDS: Envelopes containing bids must be sealed, marked, and addressed as shown in the example below. Do not put the ITB number and opening date on the envelope of a request for bid information. Envelopes with ITB numbers annotated on the outside will not be opened until the scheduled date and time.

Bid Envelope Example

• Bidder's Return Address • Purchasing Authority and Address • ITB number _____
Opening Date _____

4. PRICES: The bidder shall state prices in the units of issue on this ITB. Prices quoted for commodities must be in U.S. funds and include applicable federal duty, brokerage fees, packaging, and transportation cost to the FOB point so that upon transfer of title the commodity can be utilized without further cost. Prices quoted for services must be quoted in U.S. funds and include applicable federal duty, brokerage fee, packaging, and transportation cost so that the services can be provided without further cost. Prices quoted in bids must be exclusive of federal, state, and local taxes. If the bidder believes that certain taxes are payable by the State, the bidder may list such taxes separately, directly below the bid price for the affected item. The State is exempt from Federal Excise Tax except the following:

- Coal - Internal Revenue Code of 1986 (IRC), Section 4121 - on the purchase of coal;
- "Gas Guzzler" - IRC, Section 4064 - on the purchase of low m.p.g. automobiles, except that police and other emergency type vehicles are not subject to the tax;
- Air Cargo - IRC, Section 4271 - on the purchase of property transportation services by air;
- Air Passenger - IRC, Section 4261 - on the purchase of passenger transportation services by air carriers.

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5. **VENDOR TAX ID NUMBER:** If goods or services procured through this ITB are of a type that is required to be included on a Miscellaneous Tax Statement, as described in the Internal Revenue Code, a valid tax identification number must be provided to the State of Alaska before payment will be made.

6. **FILING A PROTEST:** A bidder may protest the award of a contract or the proposed award of a contract for supplies, services, or professional services. The protest must be filed in writing and include the following information: (1) the name, address, and telephone number of the protester; (2) the signature of the protester or the protester's representative; (3) identification of the contracting agency and the solicitation or contract at issue; (4) a detailed statement of the legal and factual grounds of the protest, including copies of relevant documents; and (5) the form of relief requested. Protests will be treated in accordance with Alaska Statutes (AS)36.30.560-36.30.610.

CONDITIONS:

1. **AUTHORITY:** This ITB is written in accordance with AS 36.30 and 2 AAC 12.

2. **COMPLIANCE:** In the performance of a contract that results from this ITB, the contractor must comply with all applicable federal, state, and borough regulations, codes, and laws; and be liable for all required insurance, licenses, permits and bonds; and pay all applicable federal, state, and borough taxes.

3. **SUITABLE MATERIALS, ETC.:** Unless otherwise specified, all materials, supplies or equipment offered by a bidder shall be new, unused, and of the latest edition, version, model or crop and of recent manufacture.

4. **SPECIFICATIONS:** Unless otherwise specified in the ITB, product brand names or model numbers specified in this ITB are examples of the type and quality of product required, and are not statements of preference. If the specifications describing an item conflict with a brand name or model number describing the item, the specifications govern. Reference to brand name or number does not preclude an offer of a comparable or better product, if full specifications and descriptive literature are provided for the product. Failure to provide such specifications and descriptive literature may be cause for rejection of the offer.

5. **FIRM OFFER:** For the purpose of award, offers made in accordance with this ITB must be good and firm for a period of ninety (90) days from the date of bid opening.

6. **EXTENSION OF PRICES:** In case of error in the extension of prices in the bid, the unit prices will govern; in a lot bid, the lot prices will govern.

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7. BID PREPARATION COSTS: The State is not liable for any costs incurred by the bidder in bid preparation.

8. CONSOLIDATION OF AWARDS: Due to high administrative costs associated with processing of purchase orders, a single low bid of \$50 or less may, at the discretion of the State, be awarded to the next low bidder receiving other awards for consolidation purposes. This paragraph is not subject to the protest terms enumerated in "INSTRUCTION TO BIDDERS", "FILING A PROTEST" above.

9. CONTRACT FUNDING: Bidders are advised that funds are available for the initial purchase and/or the first term of the contract. Payment and performance obligations for succeeding purchases and/or additional terms of the contract are subject to the availability and appropriation of funds.

10. CONFLICT OF INTEREST: An officer or employee of the State of Alaska may not seek to acquire, be a party to, or possess a financial interest in, this contract if (1) the officer or employee is an employee of the administrative unit that supervises the award of this contract; or (2) the officer or employee has the power to take or withhold official action so as to affect the award or execution of the contract.

11. ASSIGNMENT(S): Assignment of rights, duties, or payments under a contract resulting from this ITB is not permitted unless authorized in writing by the State of Alaska, Department of Administration, Division of General Services. Bids that are conditioned upon the State's approval of an assignment will be rejected as nonresponsive.

12. SUBCONTRACTOR(S): Within five (5) working days of notice, the apparent low bidder must submit a list of the subcontractors that will be used in the performance of the contract. The list must include the name of each subcontractor and the location of the place of business for each subcontractor and evidence of each subcontractor's valid Alaska business license. Subcontractors can only be changed per AS 36.30.115 (b).

13. FORCE MAJEURE: (Impossibility to perform) The contractor is not liable for the consequences of any failure to perform, or default in performing, any of its obligations under this Agreement, if that failure or default is caused by any unforeseeable Force Majeure, beyond the control of, and without the fault or negligence of, the contractor. For the purposes of this Agreement, Force Majeure will mean war (whether declared or not); revolution; invasion; insurrection; riot; civil commotion; sabotage; military or usurped power; lightning; explosion; fire; storm; drought; flood; earthquake; epidemic; quarantine; strikes; acts or restraints of governmental authorities affecting the project or directly or indirectly prohibiting or restricting the furnishing or use of materials or labor required; inability to secure materials, machinery, equipment or labor because of priority, allocation or other regulations of any governmental authorities.

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14. **LATE BIDS:** Late bids are bids received after the time and date set for receipt of the bids. Late bids will not be accepted.

15. **CONTRACT EXTENSION:** Unless otherwise provided in this ITB, the State and the successful bidder/contractor agree: (1) that any holding over of the contract excluding any exercised renewal options, will be considered as a month-to-month extension, and all other terms and conditions shall remain in full force and effect and (2) to provide written notice to the other party of the intent to cancel such month-to-month extension at least thirty (30) days before the desired date of cancellation.

16. **DEFAULT:** In case of default by the contractor, for any reason whatsoever, the State of Alaska may procure the goods or services from another source and hold the contractor responsible for any resulting excess cost and may seek other remedies under law or equity.

17. **DISPUTES:** Any dispute arising out of this agreement shall be resolved under the laws of Alaska. Any appeal of an administrative order or any original action to enforce any provision of this agreement or to obtain any relief from or remedy in connection with this agreement may be brought only in the superior court for the First Judicial District of Alaska.

18. **CONSUMER ELECTRICAL PRODUCT:** AS 45.45.910 requires that "...a person may not sell, offer to sell, or otherwise transfer in the course of the person's business a consumer electrical product that is manufactured after August 14, 1990, unless the product is clearly marked as being listed by an approved third party certification program." Electrical consumer products manufactured before August 14, 1990, must either be clearly marked as being third party certified or be marked with a warning label that complies with AS 45.45.910(e). Even exempted electrical products must be marked with the warning label. By signature on this bid the bidder certifies that the product offered is in compliance with the law. A list of approved third party certifiers, warning labels and additional information is available from: Department of Labor, Labor Standards & Safety Division, Mechanical Inspection Section, P.O. Box 107020, Anchorage, Alaska 99510-7020, (907)269-4925.

19. **NOTICE OF INTENT:** After the responses to this ITB have been opened and evaluated, a tabulation of the bids will be prepared. The tabulation, called a Notice of Intent, serves two purposes. It lists the name of each company or person that offered a bid and the price they bid. It also serves as notice of the State's intent to award a contract(s) to the bidder(s) indicated. A copy of the Notice of Intent will be mailed to each company or person who responded to the ITB. Bidders identified as the apparent low responsive bidders, are instructed not to proceed until a Purchase Order, Contract Award, Lease, or some other form of written notice is given by the contracting officer. A company or person who proceeds prior to receiving a Purchase Order, Contract Award, Lease, or some other form of written notice from the contracting officer does so without a contract and at their own risk.

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20. **PAYMENT FOR STATE PURCHASES:** Payment for agreements under \$500,000 for the undisputed purchase of goods or services provided to a State agency, will be made within 30 days of the receipt of a proper billing or the delivery of the goods or services to the location(s) specified in the agreement, whichever is later. A late payment is subject to 1.5% interest per month on the unpaid balance. Interest will not be paid if there is a dispute or if there is an agreement which establishes a lower interest rate or precludes the charging of interest.

21. **CONTRACT ENFORCEMENT:** Enforcement of this contract is the responsibility of the Contracting Officer, Department of Fish and Game.

22. **BIDDER'S NOTICE:** By signature on this form, the bidder certifies that he/she is complying with (1) the laws of the State of Alaska; (2) the applicable portion of the Federal Civil Rights Act of 1964; (3) the Equal Employment Opportunity Act and the regulations issued thereunder by the State and Federal Government; and (4) all terms and conditions set out in the ITB. If any bidder fails to comply with (1) through (4) of this paragraph, the State reserves the right to disregard the bid, terminate the contract, or consider the contractor in default.

SPECIAL CONDITIONS:

1. **ORDER DOCUMENTS:** Except as specifically allowed under this ITB, an ordering agency will not sign any vendor contract. The State is not bound by a vendor contract signed by a person who is not specifically authorized to sign for the State under this ITB. The State of Alaska Purchase Order, Contract Award and Delivery Order are the only order documents that may be used to place orders against the contract(s) resulting from this ITB.

2. **BILLING INSTRUCTIONS:** Invoices must be billed to the ordering agency's address shown on the individual Purchase Order, Contract Award or Delivery Order, not to the Division of General Services. The ordering agency will make payment after it receives the merchandise or service and the invoice. Questions concerning payment must be addressed to the ordering agency.

3. **CONTINUING OBLIGATION OF CONTRACTOR:** Notwithstanding the expiration date of a contract resulting from this ITB, the contractor is obligated to fulfill its responsibilities until warranty, guarantee, maintenance and parts availability requirements have completely expired.

4. **TERMINATION:** The Project Director, by written notice, may terminate this contract, in whole or in part, when it is in the best interest of the State. The State is liable only for payment in accordance with the payment provisions of this contract for services rendered before the effective date of termination.

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5. **NO ADDITIONAL WORK OR MATERIALS:** No claim for additional services, not specifically provided in this contract, performed or furnished by the contractor, will be allowed, nor may the contractor do any work or furnish any material not covered by the contract unless the work or material is ordered in writing by the Procurement Officer.

6. **GOVERNING LAW:** This contract is governed by the laws of the State of Alaska. All actions concerning this contract shall be brought in the Superior Court of the State of Alaska. By signature on this form, the bidder certifies that he/she is complying with (1) the laws of the State of Alaska; (2) the applicable portion of the Federal Civil Rights Act of 1964; (3) the Equal Employment Opportunity Act and the regulations issued thereunder by the State and Federal Government; and (4) all terms and conditions set out in the ITB. If any bidder fails to comply with (1) through (4) of this paragraph, the State reserves the right to disregard the bid, terminate the contract, or consider the contractor in default.

7. **PAYMENT FOR STATE PURCHASES:** Payment for agreements under \$500,000.00 will be made within 30 days of the receipt of a proper billing or delivery of the goods or services to the location(s) specified in the agreement, whichever is later. A late payment is subject to 1.5% interest per month on the unpaid balance. Interest will not be paid in there is a dispute or if there is an agreement which establishes a lower interest rate or precludes the charging of interest.

8. **RIGHT OF REJECTION:** The State reserves the right to reject any bids that do not address all the requirements of this request. In addition, the State may reject all bids at any time if there has been improper or inadequate review, or when it is not in the best interest of the State to select a bid.

9. **INDEMNIFICATION:** The contractor shall indemnify, hold harmless, and defend the contracting agency from an against any claim of, or liability for error, omission or negligent act of the Contractor under this agreement. The Contractor shall not be required to indemnify the contracting agency for a claim of, or liability for, the independent negligence of the contracting agency. If there is a claim of or liability for, the joint negligent error or omission of the Contractor and the independent negligence of the Contracting agency, the indemnification and hold harmless obligation shall be apportioned on a comparative fault basis. "Contractor" and "Contracting agency", as used within this and the following article, include the employees, agents and other contractors who are directly responsible, respectively, to each. The term "independent negligence" is negligence other than in the Contracting agency's section, administration, monitoring, or controlling of the Contractor and in approving or accepting the Contractor's work.

9. **INSURANCE:** Without limiting Contractor's indemnification, it is agree that Contractor shall purchase at its own expense and maintain in force at all times during the performance of services under this agreement the following policies of insurance. Where specific limits are shown, it is understood that they shall be the minimum acceptable limits. If the contractor's policy contains higher limits the state shall be entitled to coverage to the extent of such higher limits. Certificates of Insurance must be furnished to the Contracting Office prior to beginning

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work and must provide for a 30-day prior notice of cancellation, non-renewal or material change of conditions. Failure to furnish satisfactory evidence of insurance or lapse of the policy is a material breach of this contract and shall be grounds for termination of the contractor's services. All insurance policies shall comply with, and be issued by insurers licensed to transact the business of insurance under AS 21.

2.1 WORKER'S COMPENSATION INSURANCE: The contractor shall provide and maintain for all employees engaged in work under this contract, coverage as required by AS 23.30.045, and; where applicable, any other statutory obligations including but not limited to Federal U.S.L. & H. and Jones Act requirements. The policy must waive subrogation against the State.

2.2 COMMERCIAL GENERAL LIABILITY INSURANCE: Covering all business premises and operations used by the contractor in the performance of services under this agreement with minimum coverage limits of \$500,000 combines single limit per occurrence.

2.3 COMMERCIAL AUTOMOBILE LIABILITY INSURANCE: Covering all vehicles used by the Contractor in the performance of services under this agreement with minimum coverage limits of \$500,000 combined single limit per occurrence.

Failure to supply satisfactory proof of insurance within the time required will cause the State to declare the bidder non-responsible and to reject the bid.

2.4 HANGER LIABILITY INSURANCE: Vendor must have current hanger insurance. Upon final award, vendor must send in a copy of there current hanger insurance certificate.

PREFERENCES:

1. **ALASKAN BIDDER'S PREFERENCE:** Award will be made to the lowest responsive and responsible bidder after an Alaskan bidder's preference of five percent (5%) has been applied. The preference will be given to a person who: (1) holds a current Alaska business license; (2) submits a bid for goods or services under the name on the Alaska business license; (3) has maintained a place of business within the state staffed by the bidder, or an employee of the bidder, for a period of six (6) months immediately preceding the date of the bid; (4) is incorporated or qualified to do business under the laws of the state, is a sole proprietorship, and the proprietor is a resident of the state or is a partnership, and all partners are residents of the state; (5) if a joint venture, is composed entirely of venturers that qualify under (1) - (4) of this subsection. AS 36.30.170(b).

2. **USE OF LOCAL FOREST PRODUCTS:** In a project financed by state money in which the use of timber, lumber and manufactured lumber is required, only timber, lumber and manufactured lumber products originating in this state shall be used unless the use of those products has been determined to be impractical, in accordance with AS 36.15.010.

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3. LOCAL AGRICULTURAL AND FISHERIES PRODUCTS PREFERENCE: When agricultural, dairy, timber, lumber, or fisheries products are purchased using state money, only those products harvested in Alaska, or in the case of fisheries products harvested or processed within the jurisdiction of Alaska, will be purchased, provided they are available, of comparable quality, and priced no more than seven percent (7%) higher than products harvested outside the state, or in the case of fisheries products harvested or processed outside the jurisdiction of the state, in accordance with AS 36.15.050.

4. ALASKA PRODUCT PREFERENCE: A bidder that designates the use of an Alaska Product which meets the requirements of the ITB specification and is designated as a Class I, Class II or Class III Alaska Product by the Department of Commerce & Economic Development shall receive a preference in the bid evaluation in accordance with AS 36.30.332 and 3 AAC 92.010.

5. EMPLOYMENT PROGRAM PREFERENCE: If a bidder qualifies for the Alaskan bidder's preference, under AS 36.30.170(b), and is offering goods or services through an employment program, as defined under 36.30.990(10), and is the lowest responsive and responsible bidder with a bid that is no more than fifteen percent (15%) higher than the lowest bid, the procurement officer will make the award to that bidder, in accordance with AS 36.30.170(c) and 2 AAC 12.050.

6. ALASKANS WITH DISABILITIES PREFERENCE: If a bidder qualifies for the Alaskan bidder's preference, under AS 36.30.170(b), and is a sole proprietorship owned by a person with a disability, as defined in AS 36.30.170(j), and is the lowest responsive and responsible bidder with a bid that is no more than ten percent (10%) higher than the lowest bid, the procurement officer will make the award to that bidder, in accordance with AS 36.30.170(e).

7. EMPLOYERS OF PEOPLE WITH DISABILITIES PREFERENCE: If a bidder qualifies for the Alaskan bidder's preference, under AS 36.30.170(b), and, at the time the bid is submitted, employs a staff that is made up of fifty percent (50%) or more people with disabilities, as defined in AS 36.30.170(j), and submits a responsive and responsible bid that is no more than ten percent (10%) higher than the lowest responsive and responsible bid, the procurement officer will make the award to that bidder, in accordance with AS 36.30.170(f).

8. PREFERENCE QUALIFICATION LETTER: Regarding preferences 5, 6, and 7 above, the Division of Vocational Rehabilitation in the Department of Education maintains lists of Alaskan; [1] employment programs that qualify for preference, [2] individuals who qualify for preference as Alaskan's with disabilities, and, [3] employers who qualify for preference as employers of people with disabilities.

As evidence of an individual's or a business' right to a certain preference, the Division of Vocational Rehabilitation will issue a certification letter. To take advantage of the preferences 5, 6, or 7 above, an individual or business must be on the appropriate Division of Vocational

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Rehabilitation list, at the time the bid is opened, and must provide the procurement officer a copy of their certification letter. Bidders must attach a copy of their certification letter to their bid. The bidder's failure to provide the certification letter mentioned above, with their bid, will cause the State to disallow the preference.

In addition to the certification letter, in order to qualify for a preference under this section, the bidder must add value by actually performing, controlling, managing, and supervising the services provided, or a bidder must have sold supplies of the general nature solicited to other state agencies, governments, or the general public. The bidder shall submit written evidence that demonstrates performance of these requirements.

PURPOSE: To Contract for the use of a fully functional fishing vessel, with a captain and minimum of three (3) crew for use by the Alaska Department of Fish and Game (ADF&G) as living quarters and an operations base for activities relating to red king crab research in waters of Bristol Bay (Area T), Alaska. ADF&G will place up to four (4) department personnel aboard the vessel. This charter is scheduled to last for eighteen (18) days. The onboard ADF&G personnel will study crabs and other marine life that are captured and monitor all catches. Approximately four (4) days of at-sea charter time will be spent in transit to and from the fishing grounds/study area; the remaining fourteen (14) days of charter service will be devoted to project cost recovery fishing and at-sea research.

DEFAULT: A contractor's failure to comply with any of the terms and conditions of this contract may result in a default action by the State of Alaska, hereafter referred to as "the State".

COMPLIANCE: The bidder for this contract must comply with all applicable national, federal, state, local and borough regulations, codes, and laws; be liable for all required insurance, licenses, permits and bonds; pay all applicable federal, state, local and borough taxes.

NOTICE OF INTENT: After the responses to this invitation to Bid (ITB) have been opened and evaluated a tabulation of the bids will be prepared. This tabulation, called a Notice of Intent, serves two purposes: 1) it lists the name of each company or person that offered a bid and the price they bid, and 2) it serves as notice of the State's intent to award a contract to the bidder(s) indicated. A copy of the Notice of Intent will be mailed to each company or person who responded to the ITB. Bidders identified as the apparent low responsive bidders are instructed not to proceed until a Purchase Order, Contract Award, Lease, or, some other form of written notice is issued by the Contracting Officer. A company or person who proceeds prior to receiving a Purchase Order, Contract Award, Lease, or, some other form of written notice from the Contracting Officer does so without a contract and at their own risk.

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PAYMENT FOR STATE PURCHASES: Payment for agreements under \$500,000, for the undisputed purchase of goods or services provided to a State agency, will be made within 30 days of the receipt of a proper billing or the delivery of the goods or services to the location(s) specified in the agreement, whichever is later. A late payment is subject to 1.5% interest per month on the unpaid balance. Interest will not be paid if there is a dispute or if there is an agreement that establishes a lower interest rate or precludes the charging of interest.

FEDERAL EXCISE TAX: The State is exempt from the Federal Excise Tax except the following:

- Coal - Internal Revenue Code of 1986 (IRC), Section 4121 - on the purchase of coal;
- "Gas Guzzler" - IRC, Section 4064 - on the purchase of low m.p.g. automobiles, except that police and other emergency type vehicles are not subject to the tax;
- Air Cargo - IRC, Section 4271 - on the purchase of property transportation services by air;
- Air Passenger - IRC, Section 4261 - on the purchase of passenger transportation services by air charter.

CONTRACT ENFORCEMENT: Enforcement of this contract is the responsibility of the ADF&G Contracting Officer.

FIRM AND UNQUALIFIED (UNCONDITIONAL) OFFER: Bidders must provide enough information, with their bid, to constitute a definite, firm, and unqualified or unconditional offer. In order to be responsive a bid must constitute a definite, firm, and unqualified or unconditional offer to meet all of the meaningful or material terms of the ITB. Some meaningful or material terms are those items that could affect price, quantity, quality, or delivery. Also included as meaningful or material terms are those which are clearly identified in the ITB, and which, for reasons of policy, must be complied with at risk of bid rejection for non responsiveness.

BIDDERS NOTE: This contract involves financial risks. Please read this ITB very carefully and make certain that you understand the risks and responsibilities. If you have any questions contact the Contracting Officer at: Voice (907) 465 - 4131, TDD (907) 465 - 3646 or FAX (907) 465 - 6181.

HOLD HARMLESS: The contractor will indemnify, save harmless and defend the State, its officers, agents and employees from all liability, including costs and expenses, for all actions or claims resulting from injuries or damages sustained by any person or property arising directly or indirectly as a result of any error, omission or negligent act of the contractor, subcontractor or anyone directly or indirectly employed by them in the performance of this contract.

All actions or claims including costs and expenses resulting from injuries or damages sustained by any person or property arising directly or indirectly from the contractor's performance of this

-Continued-

contract which are caused by the joint negligence of the State and the contractor will be apportioned on a comparative fault basis. Any such joint negligence on the part of the State must be direct result of active involvement by the State.

INSURANCE: The contractor will maintain insurance coverage satisfactory the Division of Risk Management, Department of Administration. The minimum acceptable levels of insurance regarding this solicitation and any subsequent contract are listed below. Certificates of insurance must list the State as an additional insured and shall provide for a 30 day written notice to the Contracting Officer prior to any cancellation, nonrenewal or material change in such insurance.

Proof of insurance is required for the following:

A. Protection and Indemnity, including crew exposure, in the amount of 1,000,000.00.

Failure to supply satisfactory proof of insurance within the time required will cause the State to declare the bidder nonresponsive and reject the bid.

LENGTH OF CONTRACT: Approximately eighteen (18) continuous days, between September 25 and October 12, 2000. The length of the charter will not exceed eighteen (18) days unless an extension of the charter period is mutually agreed upon by the contractor and ADF&G. The commencement date of the charter may also vary only by mutual agreement between the contractor and ADF&G.

CANCELLATION: The State reserves the right to cancel the contract at the State's sole discretion.

The State will have the sole discretion to cancel any contract that results from this ITB after the charter has commenced, if it is determined by the State that there are insufficient funds to cover the State's cost of the charter.

ESTIMATED USE: The charter dates and length of charters referenced in this ITB are the State's estimated requirements. The State does not guarantee a minimum or maximum number of charter days. However, for the purpose of bid evaluation the State will assume the use of eighteen (18) contract days.

LOCATION OF VESSEL OPERATION: The vessel is required to operate in waters of Bristol Bay (Area T), Alaska. **The charter will begin and end in Dutch Harbor, Alaska.**

TEST FISH PROGRAM: The Test Fish Program was established by the legislature {AS 16.05.050(15)} to allow ADF&G to implement research programs funded by the sale of fish and shellfish caught during research activities ADF&G's expense for this research is \$399,000. The charter will be financed as follows:

-Continued-

DAY 1 TO DAY 8: Cost recovery fishing for red king crabs in the Bristol Bay waters of the Bering Sea, and delivery of harvested cost recovery crabs at or near either Dutch Harbor, Akutan, King Cove, Port Moller, or the Pribilof Islands, Alaska. Revenues for the project will be generated by retaining 100% of captured male red king crabs equal to or greater than 6.5 inches in carapace width.

DAY 9 TO DAY 18: At-sea research. The captain and appropriate crew must be onboard the vessel for this purpose.

RISK TO VESSEL OWNER: Because funding for this charter is totally dependent on the crab catch, the charter involves a monetary risk. **The contractor may receive less than the amount bid for the contract and there is also a risk of not receiving anything.** When committing a legal signature to this ITB, the contractor has agreed to take this risk.

PAYMENT FOR THE CHARTER: The contractor will be paid the amount bid up to the maximum eighteen (18) days, or the amount of revenue generated by the crab sold, less \$399,000 for ADF&G's fixed expenses, whichever is least. Days or partial days spent shoreside by the vessel captain and crew conducting activities involving loading and unloading ADF&G gear and equipment will also be paid at the daily charter rate, up to and included within the maximum eighteen (18) days. Payment for partial calendar day charter vessel operation within the contractual commencement and conclusion dates of the eighteen (18) continuous day charter period will be prorated on an hourly basis from the daily charter vessel rate. Payment for the charter contract will be allotted as follows:

- (1) If attained, the State will retain the first \$200,000 from the receipts of harvested crabs.
- (2) The contractor will receive the next \$50,000 or the amount bid up to the maximum eighteen (18) days, **whichever is the least**, in the form of a State of Alaska check from receipts of harvested crabs.
- (3) If attained, the State will receive the next \$199,000 in receipts of harvested crabs.
- (4) If attained, the contractor will receive either the remaining amount of receipts from the crab harvest up to the bid price of the charter or the balance of the crab harvest, **whichever is least**.

The vessel captain and crew will fish in the manner directed by the ADF&G crew leader until sufficient crabs are obtained to cover costs to the State (\$399,000) plus the cost of the vessel charter, or until eighteen (18) days have lapsed.

CAPTAIN AND CREW ABOARD THE VESSEL: This contract requires a vessel captain and minimum of three (3) crew members. The experience and licensing requirements for the vessel captain and crew are set out below.

-Continued-

STATE PERSONNEL ABOARD THE VESSEL: During this contract the State will place up to four (4) ADF&G crewmembers aboard the vessel.

VESSEL INSPECTION: The vessel will be subject to inspection by ADF&G. The successful bidder must, upon 10 days notice, make the vessel available for inspection at Dutch Harbor, Alaska or at a another specified location mutually agreed upon by the bidder/contractor and the State.

By the date set for the vessel inspection, all of the equipment called for in this ITB must be installed and functional. The successful bidder must pay the cost of all the equipment and any vessel alterations needed to meet the requirements of this ITB. If, at the time of inspection, a vessel fails to meet the ITB requirements, the State may consider the offer non-responsive and reject the bid or terminate the contract.

A USCG Certificate of Inspection will be required to validate the type and size of vessel offered and to verify that contract specifications are met by the vessel offered.

SEAWORTHINESS: Inspection of the vessel is not intended to convey acceptance by the State nor should it be considered conclusive evidence that the State believes the vessel is seaworthy. If during ADF&G's inspection or at any time during the subsequent term of the contract conditions are noted that might affect the safety or seaworthiness of the vessel, the State will arrange for further inspection by a person with the appropriate credentials to determine if the condition of the vessel is acceptable.

VESSEL REQUIREMENTS:

- A. Length of not less than one hundred (100) feet. Length will be determined by measuring the length overall from the foremost part of the hull to the aftermost part of the hull, excluding bowsprits, rudders, accessory brackets and similar fittings and attachments.
- B. Vessel main engine(s) must be a minimum total of 750 horsepower.
- C. Sleeping space for up to four (4) ADF&G personnel, in addition to sleeping space for the vessel captain and crew. Each sleeping space used by ADF&G personnel must be at least twenty-six (26) inches in width at the shoulders and seventy-seven (77) inches long.
- D. Minimum nine (9) cubic feet of dry storage drawer space for ADF&G equipment.

-Continued-

- E. Minimum twelve (12) square feet of flat, clear, interior work space for daily data entry work by ADF&G personnel. Galley table is acceptable. One 110-volt AC outlet must be available near this area.
- F. Minimum six (6) square feet of flat, clear, interior work space, either shelf or table, in a relatively undisturbed location, for semi-permanent installation of an electronic data entry device during the charter period. One 110-volt AC outlet must be available near this area.
- G. Minimum five hundred (500) square feet of flat, clear, exterior deck work space for ADF&G personnel. Vessels with shelter decks are highly preferred. The work area must be well-lit (direct lights within a radius of six feet of ADF&G personnel) to permit work at night. If fixed lighting is unavailable, responsive vessels must have mobile lighting, power cords, and all associated accessories to make a temporary installation of required lighting.
- H. Stove, oven, sink, galley table, and all materials and equipment necessary for daily meal preparation, cooking, and clean up.
- I. Refrigerated storage space sufficient to maintain frozen food for all onboard personnel for the duration of the longest continuous period of vessel operation.
- J. Freezer storage space sufficient to maintain frozen food for all onboard personnel for the duration of the longest continuous period of vessel operation.
- K. Water storage or sea water conversion capable of providing sufficient fresh water to permit eighteen (18) continuous days of vessel operation. Water supply must be sufficient for potable and drinking water needs, to permit daily washing of dishes, and to permit thrice-weekly showers and once weekly clothes washing for all onboard personnel.
- L. Fully functional Radar system, with a minimum range of 60 miles, in good operating condition. Backup radar system highly desirable.
- M. Fully functional Automatic pilot in good operating condition. Automatic readout Loran C and/or GPS. Backup systems desirable. Fathometer with 150 fathom range. Backup system is highly desirable. Minimum of two anchors with ground tackle; all of the size and type required for the size and type of vessel chartered.
- N. Two (2) single side-band and VHF radio transmitter(s) and receiver(s) fully functional and in good operating condition equipped with standard marine frequencies for the area in which operations will be conducted, including VHF channels 6 and 16. Single side-band radio transceiver with at minimum, SSB frequencies of 4125, 5195 and 3230 (for receiving) and 4125, 5195 and 3230 (for transmitting) to allow direct communication with

-Continued-

marine operator (KMI). Backup communications system is highly desirable. Vessels equipped with INMARSAT Standard C satellite communication, Telex, wireless Internet connection or satellite telephone are also highly preferred.

- O. USCG approved first-aid kit.
- P. USCG approved fire-fighting equipment of the size, type and quantity required for the size and type vessel chartered.
- Q. USCG approved life rafts. The rated capacity of the rafts must be adequate to accommodate all personnel aboard the vessel; this includes the vessel captain and crew, and the four (4) ADF&G crew.
- R. **USCG approved survival suits of appropriate fittings are required for all personnel aboard the vessel including the vessel captain and crew and the ADF&G crew. The State will supply survival suits for the ADF&G crew.**
- S. The vessel's main engine(s) must be diesel powered. Bids offering gasoline-powered engines will be rejected as non-responsive.
- T. Minimum cruising speed in calm seas (without pots on deck or crabs in holding tanks) must be at least 8 knots.
- U. Two (2) power block s (one spare) to pull crab gear, minimum capacity 1,000 pounds each.
- V. Hydraulic or electric motor operated bait chopper.
- W. One catch sorting table, minimum 4 feet by 8 feet in dimension.
- X. One hundred-twenty (120) 7 feet X 7 feet dimension king crab pots (or one-hundred-twenty 6.5 feet X 6.5 feet dimension king crab pots), and sufficient lines and buoys to single line fish all pots concurrently to a maximum depth of 60 fathoms.
- Y. Number of bait jars sufficient to fish 120 pots concurrently with at least one gallon (i.e., two 2-quart containers) of bait per pot.

VESSEL CREW REQUIREMENTS:

- (a) Crew to consist of a captain with at least five (5) years of crab pot fishing experience in Alaskan waters and three (3) experienced fishermen. One of the fishermen must be an engineer with five (5) years experience aboard fishing vessels and fully knowledgeable of the chartered vessel and equipment. The vessel crew will be

-Continued-

expected to perform cooking and cleaning duties in addition to operating the vessel and fishing the gear as prescribed by the ADF&G crew leader.

- (b) The vessel crew will be expected to fish the pot gear, although the ADF&G crew will handle sampling of catches once fished pots are brought aboard the vessel.
- (c) The State will have the right to require replacement of any vessel crewmember. If the vessel operates shorthanded due to replacement or illness of a vessel crew member for a period in excess of twenty-four (24) hours, the State will deduct from the charter rate for that period of time in an amount equal to the missing crewman's wages and related direct cost of employment (i.e., social security tax, unemployment insurance, etc.). The total cost of replacing a vessel crewmember aboard the vessel will be at the contractor's expense. The contractor will be responsible for payment of wages, direct cost of employment and will be responsible for all vessel crewmembers. The State will be responsible for payment of daily charter rates only, and will not reimburse the contractor for vessel crew wages.
- (d) The captain will be required to complete proper fishing forms for each day of fishing, including recording weather conditions and fishing location data. The captain and vessel crew will be required to locate scheduled fishing areas.
- (e) There shall be no alcohol or controlled substances aboard the vessel during the charter period.

UNUSUAL HOURS: It may be necessary to run the vessel twenty-four (24) hours continuously to travel from one location to another. Furthermore, it may be necessary to fish gear at night (midnight) or early in the morning (midnight to 6:00 a.m.).

DELAYS OR INTERRUPTIONS OF OPERATIONS: For each hour of contract time lost, for any reason other than weather or an act directly attributable to ADF&G personnel aboard the vessel, the State will on each occasion, be entitled to deduct from the total contract payment, an amount equal to the prorated hourly contract rate for each of the hours the vessel or essential equipment on the vessel is out of service.

TERMINATION OF THE CONTRACT: The State may, without fault or liability, terminate the contract for any of the following reasons:

- 1) The condition of the vessel or essential equipment on the vessel remains such that it cannot be used for work by the ADF&G crew for a period of more than seventy-two (72) hours.
- 2) Lack of funds for the contract project.

-Continued-

- 3) Insubordination and/or lack of cooperation by the vessel captain or crew.
- 4) Failure of the captain, vessel, or vessel crew to report at the time and location specified in this ITB to begin the contract.

In the event of early termination of the contract, State-owned gear may be placed in storage or returned to a location that is mutually agreed upon by the State and the contractor. Charges for gear storage will be paid by the State. The State will not assume any liability for transporting the captain and vessel crew to their homeport. Contract payments will cease on the hour and date the vessel is unable to continue normal operations.

PERFORMANCE REQUIREMENTS OF THE VESSEL CAPTAIN & COMMAND OF THE VESSEL:

- A. Either underway or at anchor the captain's orders will be final in matters regarding the general operation of the vessel, the operation of the vessel equipment and fishing gear, the general activities and safety of the vessel crew and ADF&G crew, and the navigation of the vessel.
- B. The vessel captain will comply with all directives given by the ADF&G crew leader regarding cost recovery fishing and research activities, provided that those directives do not directly or indirectly endanger the vessel, the captain or crew or the ADF&G crew.
- C. The vessel captain will obey all USCG, State and other applicable regulations, rules, and statutes pertaining to the safe and legal operation of the vessel.

PERFORMANCE REQUIREMENTS OF THE VESSEL CREW MEMBERS: With the vessel serving as an operations base and living quarters for ADF&G personnel, the vessel captain and crew will be required to provide the following services and accommodations:

- A. General navigation and operation of the vessel either underway or at anchor.
- B. Space for compiling and analyzing the data collected.
- C. Communications base for dispersing information.
- D. Basic living accommodations for up to four (4) ADF&G personnel.
- E. Meal preparation, cooking and clean up.
- F. General cleaning of the interior and exterior (deck work area) of the vessel.

-Continued-

- G. General assistance as requested by the ADF&G crew leader to ADF&G personnel in the performance of their work. The vessel crew will be expected to handle catches as prescribed by the ADF&G crew leader and will be expected to fish the gear. The ADF&G crew will maintain responsibility for sampling of catches once fished pots are brought aboard the vessel.
- H. The captain must provide a safety orientation briefing to all vessel and ADF&G crew prior to the commencement of the charter period. Both the vessel crew and ADF&G crew must have general instructions regarding the following:
1. The location and operation of lifesaving and emergency equipment (life rings, life rafts, immersion/survival suits, activating the general alarm).
 2. Operation of assigned equipment.
 3. Instructions for making a distress call.
 4. What to do in the event of a person overboard.
 5. **What to do in the event of a fire.**
 6. What to do in the event of flooding.
 7. What to do if an 'abandon ship' order is issued.

CONSUMABLES TO BE PROVIDED BY THE CONTRACTOR AND INCLUDED IN THE PER DAY CONTRACT PRICE:

1. The contractor will provide all fuel, lubricants, oils, greases and filters required during the contract. At the beginning of the contract all fuel and lubricant tanks must be full and all filters must be fresh. In addition, the vessel must have aboard extra lubricants, oils, greases and filters in amounts sufficient for the entire contract period.
2. The contractor will provide three ample, balanced, and nutritious meals each day for all onboard ADF&G crew, the vessel captain and crew.
3. The contractor will provide quantities of frozen herring sufficient for baiting up to 120 pots per day during fourteen (14) days of gear operation during the contract period. One (1) gallon of frozen (chopped) herring will be used to bait each pot.

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MISCELLANEOUS PROVISIONS: The State may, at its own expense and only for the term of the contract, install and retain in the vessel equipment necessary to accomplish the objectives of the charter. The State will remove this equipment at the termination of the contract period without damage or permanent alteration to the vessel.

VESSEL INFORMATION FORM: Bidders must complete the vessel information form below. A bidder's failure to complete the vessel information form may cause the State to reject the bid as non responsive.

VESSEL OWNER NAME: Mattsen Fisheries, Inc
ADDRESS: P.O. Box 2686, Poulsbo, WA 98370
PHONE: (360) 697 2666
FAX (OPTIONAL): (360) 697 2551 EMAIL (OPTIONAL): Janie/matt@msn.com
VESSEL NAME AND NUMBER: Shaman, 02036
VESSEL TYPE: house forward crab/cod/got boat
CURRENT LOCATION OF VESSEL: enroute to Seattle WA for shipyard
CALL NUMBERS AND FREQUENCY: WA2 9385
YEAR BUILT: 1974
REGISTRY NUMBER: 558637
CRUISING SPEED KNOTS: 10 kts
OVERALL LENGTH: 110'
VESSEL WEIGHT: 199 gross tons
DIESEL POWERED MAIN ENGINE: YES NO
VESSEL HORSEPOWER: 1125
HAS THE VESSEL BEEN INSPECTED BY THE USCG IN THE LAST 12 MONTHS?
 YES NO
If yes, please furnish a copy of the USCG "Commercial Fishing Vessel Safety Examination" letter with your bid.
note: still current on safety exam; will be done this summer

-Continued-

SURVIVAL EQUIPMENT: The State requires that the life rafts carried aboard the vessel be USCG approved. The rated capacity of the life rafts must be adequate to accommodate all of the people aboard the vessel; this includes the four (4) ADF&G crew, the vessel captain and crew.

Bidders must provide life rafts to accommodate all of the people aboard the vessel. Indicate the brand, capacity and USCG approval number for the life rafts to be carried aboard the vessel.

RAFT BRAND	CAPACITY	USCG APPROVAL NUMBER
EXAMPLE: Beaufort	8	
A. Viking	10	V 023740
B. B.F. Goodrich	10	on vessel -
C.		
D.		

Bidders must provide at least enough survival suits for all those onboard. Indicate the brand and model of survival suits carried aboard the vessel.

SURVIVAL SUIT BRAND AND MODEL	NUMBER OF SUITS
A. Imperial	8
B.	
C.	

Failure to specify survival suits and USCG approved life rafts to accommodate all those on board will cause the State to reject the bid as non responsive.

Is all of the equipment called for in this ITB installed and functional on the date of the bid opening?
 YES NO

If "NO", indicate exceptions that will be corrected prior to the date set for the inspection by the State:

BIDDERS NOTE: All of the equipment called for in this ITB must be installed and functional at the time of the vessel inspection.

USCG LICENSE: In the space provided, bidders must enter the name of the person who will serve as captain of the vessel. The captain must be properly licensed by the USCG for the size/type vessel being offered. A photocopy of that person's USCG license should be submitted with the bid and must be submitted within 10 days of the

State's request. A bidder's failure to provide a copy of the license, as stated above, may cause the State to reject the bid as non responsive.

If, during the term of the contract, a different person is retained as captain, a photocopy of that person's license must be submitted to the Contracting Officer prior to the time the person begins working as vessel captain. The Contracting Officer must accept and authorize the change of captains. The contractor's failure to follow this procedure may cause the State to terminate the contract.

On the line below, print the name of the person who will serve as Captain.

Daniel R. Mattsen

VESSEL CAPTAIN

Identify the rating(s) held by the person named above.

Operator of Uninspected Six Passenger Vessels

- | | | |
|--|---------------------------------|---------------------------------------|
| <input type="checkbox"/> Master, 25 Ton vessels | <input type="checkbox"/> Inland | <input type="checkbox"/> Near coastal |
| <input type="checkbox"/> Master, 50 Ton vessels | <input type="checkbox"/> Inland | <input type="checkbox"/> Near coastal |
| <input type="checkbox"/> Master, 100 Ton vessels | <input type="checkbox"/> Inland | <input type="checkbox"/> Near coastal |
| <input type="checkbox"/> Master, 150 Ton vessels | <input type="checkbox"/> Inland | <input type="checkbox"/> Near coastal |
| <input type="checkbox"/> Master, 200 Ton vessels | <input type="checkbox"/> Inland | <input type="checkbox"/> Near coastal |
| <input type="checkbox"/> Master, 500 Ton vessels | <input type="checkbox"/> Inland | <input type="checkbox"/> Near coastal |
| <input checked="" type="checkbox"/> Master, 1600 Ton vessels | <input type="checkbox"/> Inland | <input type="checkbox"/> Near coastal |

Oceans

CREW REQUIREMENTS: At a minimum, the vessel crew will consist of a captain and three (3) crewmembers. The contractor will be responsible for payment of wages, direct cost of employment and fringe benefits, if any, to the vessel crewmembers. The State will be responsible for payment of the daily charter rate only and will not reimburse the contractor for crew wages in addition to the charter rate.

CAPTAIN AND CREW EXPERIENCE INFORMATION: Bidders must complete the captain and crew information form below. A bidder's failure to complete the captain and crew information may cause the State to reject the bid as non responsive.

CAPTAIN EXPERIENCE REQUIREMENTS: The vessel captain must have a minimum of five (5) years experience in commercial crab fishing in Alaskan waters. The captain must also have a minimum of one (1) year experience, as a captain, in the type and size vessel specified for this contract.

- Captain's experience, as a captain, operating in Alaskan waters. 17 years.
- Captain's experience, as a captain, in various size, type/class vessels.

a) Size type/class of vessel: 100' + Tanked crab vessels
Number of years experience in this size type/class of vessel: 14 years.

b) Size type/class of vessel: 58' - 100' Tanked crab vessels
Number of years experience in this size type/class of vessel: 2 years.

c) Size type/class of vessel: 32' gillnetter
Number of years experience in this size type/class of vessel: 3 years.

d) Size type/class of vessel: _____
Number of years experience in this size type/class of vessel: _____ years.

CREW EXPERIENCE REQUIREMENTS:

1. **ENGINEER:** One of the crew must be an engineer. The engineer must have a minimum of five (5) years experience as an engineer in the type and size vessel specified for this contract. Specify engineer's experience, as an engineer, in various size, type/class vessels below:

-Continued-

- a) Size type/class of vessel: 100'+ crab vessels
Number of years experience in this size type/class of vessel: 11 years.
- b) Size type/class of vessel: Minor slips
Number of years experience in this size type/class of vessel: 4 years.
- c) Size type/class of vessel: _____
Number of years experience in this size type/class of vessel: _____ years.
- d) Size type/class of vessel: _____
Number of years experience in this size type/class of vessel: _____ years.

2. **REMAINING CREWMEMBERS:** The remaining crewmembers must have a minimum of one (1) year's experience fishing at sea.

- a) First crewmember's experience fishing at sea: 4 years.
- b) Second crewmember's experience fishing at sea: 6 years.
- c) Third crewmember's experience fishing at sea: 2 years.

-Continued-

METHOD OF AWARD: Award will be made to the lowest responsive and responsible bidder.

BID SCHEDULE

CONTRACT RATE PER DAY \$ 2950 X 18 DAYS = \$ 53100⁰⁰ TOTAL BID PRICE



Hypothermia

Causes:

- ◆ Improper clothing.
- ◆ Wet.
- ◆ Wind.
- ◆ Cold.
- ◆ Poor judgement.

Prevention:

- ◆ Use good judgement.
- ◆ Wear layered clothing.
- ◆ Avoid getting wet from sweat, rain, snow, etc.
- ◆ Eat nutritious food regularly.
- ◆ Rest frequently.

Symptoms:

- ◆ May include shivering, confusion, poor coordination, unconsciousness.
- ◆ Are often hard to see.
- ◆ Severely hypothermic victims may *look* dead — treat them anyway.

Treatment:

- ◆ If conditions indicate the possibility of hypothermia, treat for it.
- ◆ Handle the victim *very* gently.
- ◆ Get victim out of the weather and remove wet clothing.
- ◆ In a water rescue, victim should be lifted horizontally, if possible without causing delay.
- ◆ Check for breathing and pulse — give CPR if necessary.
- ◆ Lay skin-to-skin next to victim under blanket or sleeping bag.
- ◆ Continue treatment for at least one hour.
- ◆ **KEEP TRYING!**

Transport:

- ◆ Continue treatment.
- ◆ Get severely hypothermic victims to a medical facility as soon as possible.

Remember...Hypothermia Can Kill!



*ALASKA MARINE SAFETY EDUCATION ASSOCIATION
P.O. BOX 2592, SITKA, ALASKA 99835 (907) 747-3287*

Member organizations: Alaska Department of Fish & Game; Alaska Department of Public Safety; Alaska Vocational Technical Center; Southeast Alaska Regional Health Corporation; Southeast Region Emergency Medical Council; University of Alaska, Marine Advisory Program; United States Coast Guard, 17th District.

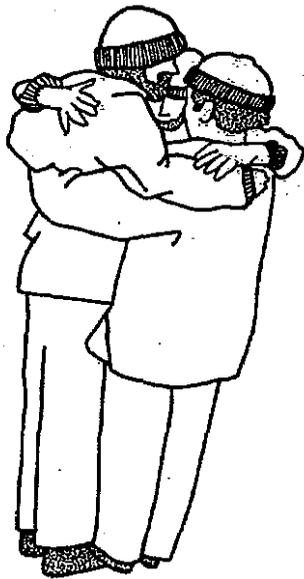
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HELP

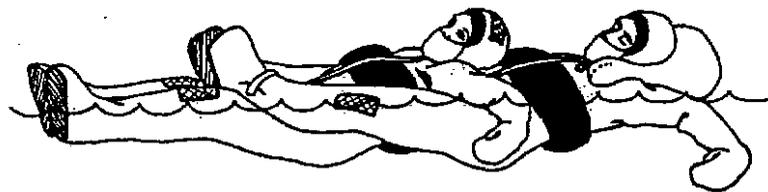
(Heat Escape Lessening Position)



Huddle Position



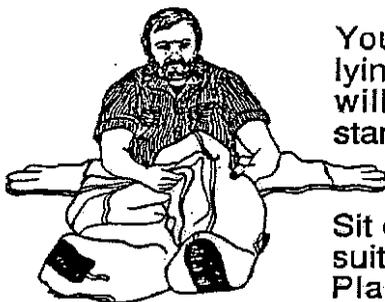
Chain Swim



-Continued-

DONNING IMMERSION SUITS

If your life may depend on quickly donning your survival suit in an emergency, it makes sense to have done it before. Monthly practice should reduce your donning time from minutes to seconds.



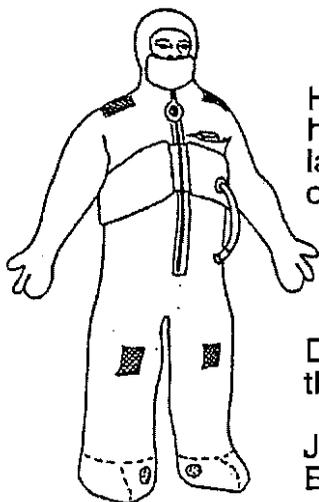
You should practice donning the suit while lying on the deck. Vessel movement or list will often prevent donning the suit in a standing position.

Sit on the deck and work your legs into the suit. Leave boots or shoes on if possible. Placing plastic bags over your boots or shoes may make donning the suit easier. Wear or bring extra warm clothing if possible.

Pull the hood over your head. Place one arm into each sleeve of the suit and reset the hood on your head.

or

Place your weaker arm into the sleeve of the suit. Then reach up and pull the hood over your head with your free hand. Then place your strong arm into the sleeve of the suit.



Holding the zipper below the slide with one hand, fully close the zipper by pulling on the lanyard with the other hand. Secure the flap over the face/mouth.

WARNINGS:

Do not inflate the air bladder until you are in the water to prevent damage or injury.

Jumping into the water is a last resort. Ease/lower yourself into the water if practical.

CARE & MAINTENANCE OF IMMERSION SUITS

The life span of your suit, as well as your own life –if you find yourself in the water–depends greatly on the care and maintenance you give your immersion suit. Your immersion suit is only as good as you are about caring for it. Here are some points that should be checked whenever you inspect your suit (at least once a month).

Zipper:

Inspect closely for missing teeth and signs of corrosion. Lubricate teeth on the outside and inside of zipper with product recommended by the manufacturer. Do not use oil based greases. Scrub zipper with a tooth brush to remove build up of residues. Run zipper up and down to check for smoothness.

Inflation Hose & Bladder:

Pull gently on tube to make sure the tip of tube or its attachment point on the bladder do not separate. Use plastic wire ties at these points if not present. Leave the silver knurled knob below mouth piece in the down position, ready for use (see figure 1). Once a year remove bladder, inflate overnight or soak under water to check for leaks. Make sure to reattach to suit when dry!

Figure 1.



Material:

Inspect closely for small holes, tears and compression wrinkles in suit. If dirty or used in pool or salt water, rinse thoroughly inside and out with fresh water. Turn suit completely inside out to dry in a well ventilated space. Do not dry in direct sun. One or two days later it will be ready to dry on the outside. If dirt or oil is present, wash with a mild soap and rinse. Do not dry clean.

Markings:

All immersion suits are required to be marked with the owner's name, vessel's name or the name of the person to whom the suit is assigned.

(BEWARE–Paint may damage the material.)

Practice:

Don your suit. How long does it take? How well does your suit fit? With foul-weather gear on can it still be zipped up?

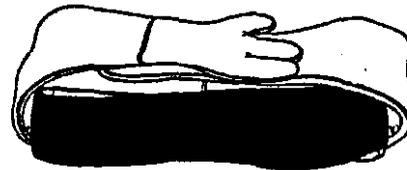
Stowage:

Leave the zipper open, but zipped up one-inch up from the bottom. Roll the suit legs up first, followed by hood and finally place arms over and place in bag (see figures 2 and 3). Make sure the neoprene flapper valve in foot is not creased. Otherwise, follow the manufacturers stowage recommendation. Lubricate snaps on bag. Store suits in

Figure 2.



Figure 3.



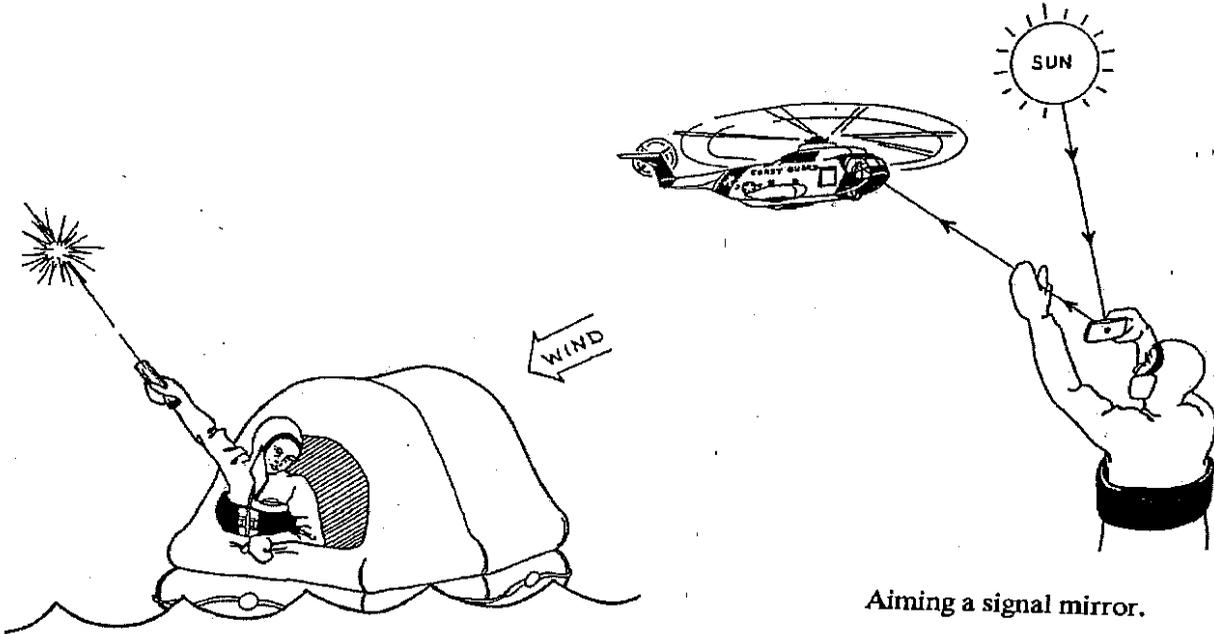
their bags, not against each other without bags. Do not place heavy weights on bag as suit material will compress and may puncture or weaken. Place in an accessible location so it can be retrieved quickly in an emergency. Plastic bags kept with suit can be worn over shoes/boots to make donning quicker. For long term, off-season stowage, hang the suit in a dry place on a thick, padded hanger (like one designed for a dive suit–do not use wire hangers).

Accessories:

Suit should have 31 square inches of retro-reflective tape visible above the water in any stable position (as req'd by the F/V Safety Act), a zipper tab for ease in gripping with suit gloves on, a whistle, and USCG approved light. Additional recommendations include a personal survival kit, hand-held VHF radio, and personal EPIRB.

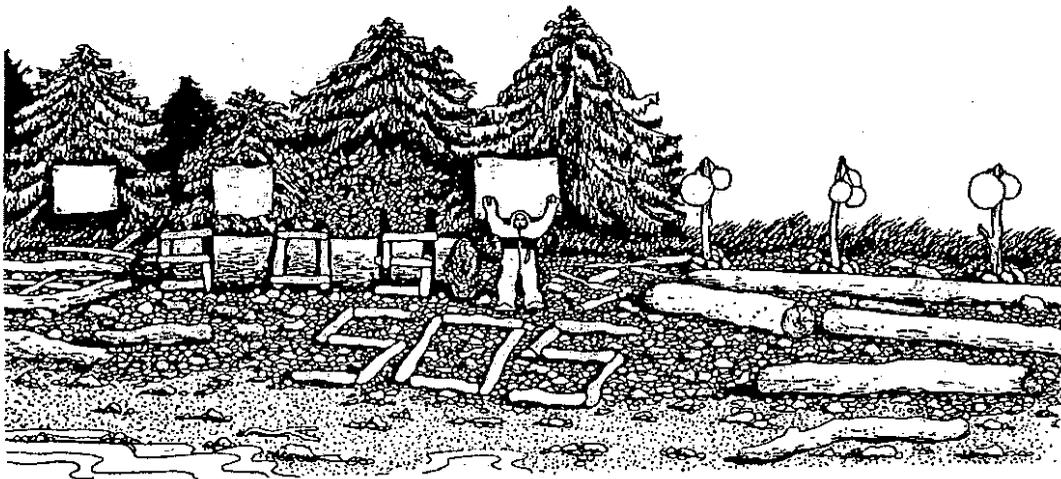
-Continued-

Use of Distress Signals



When firing a flare hold the flare away from the raft and turn your head away.

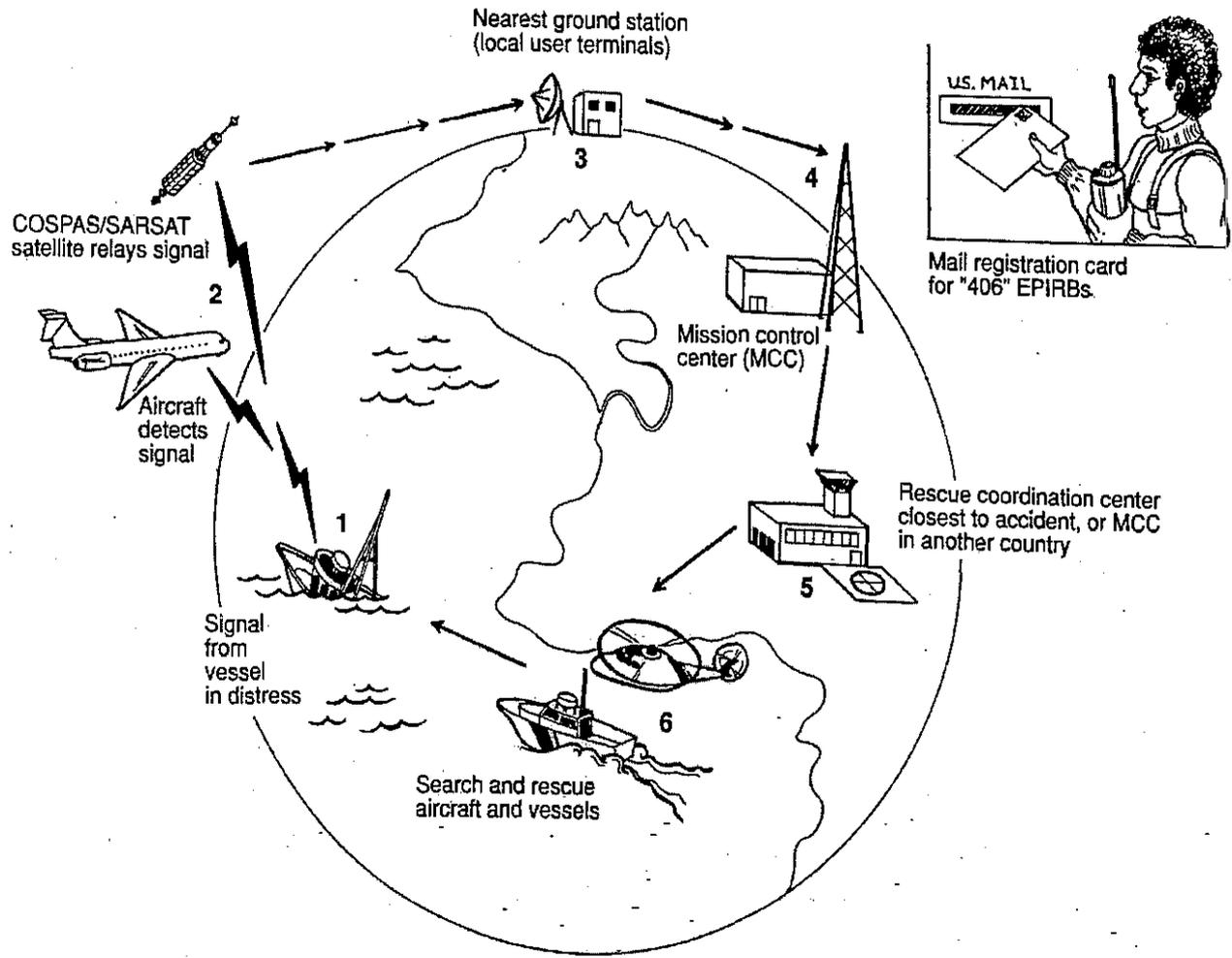
Aiming a signal mirror.



Make sure signals attract attention and convey the need for help.

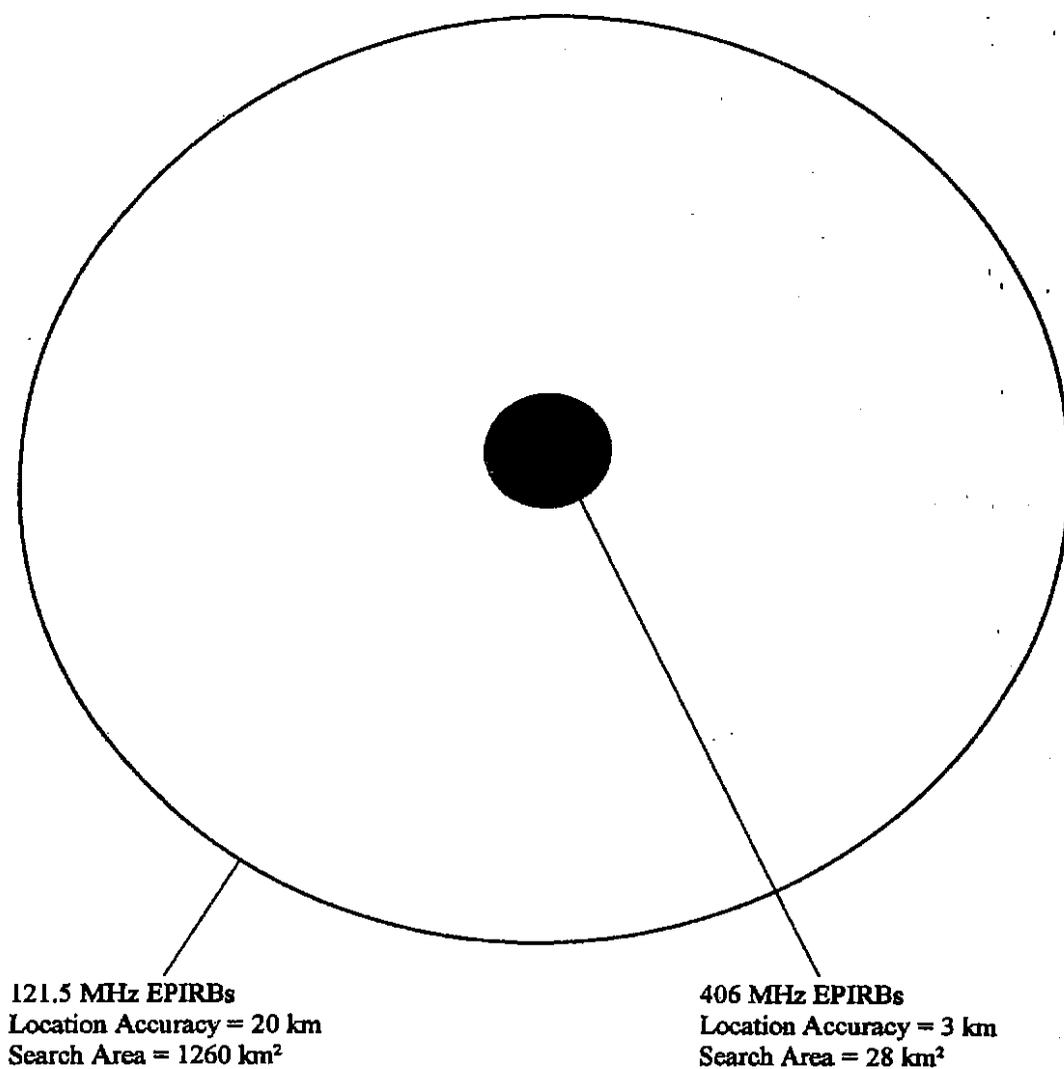
-Continued-

How an EPIRB signal is picked up and relayed.



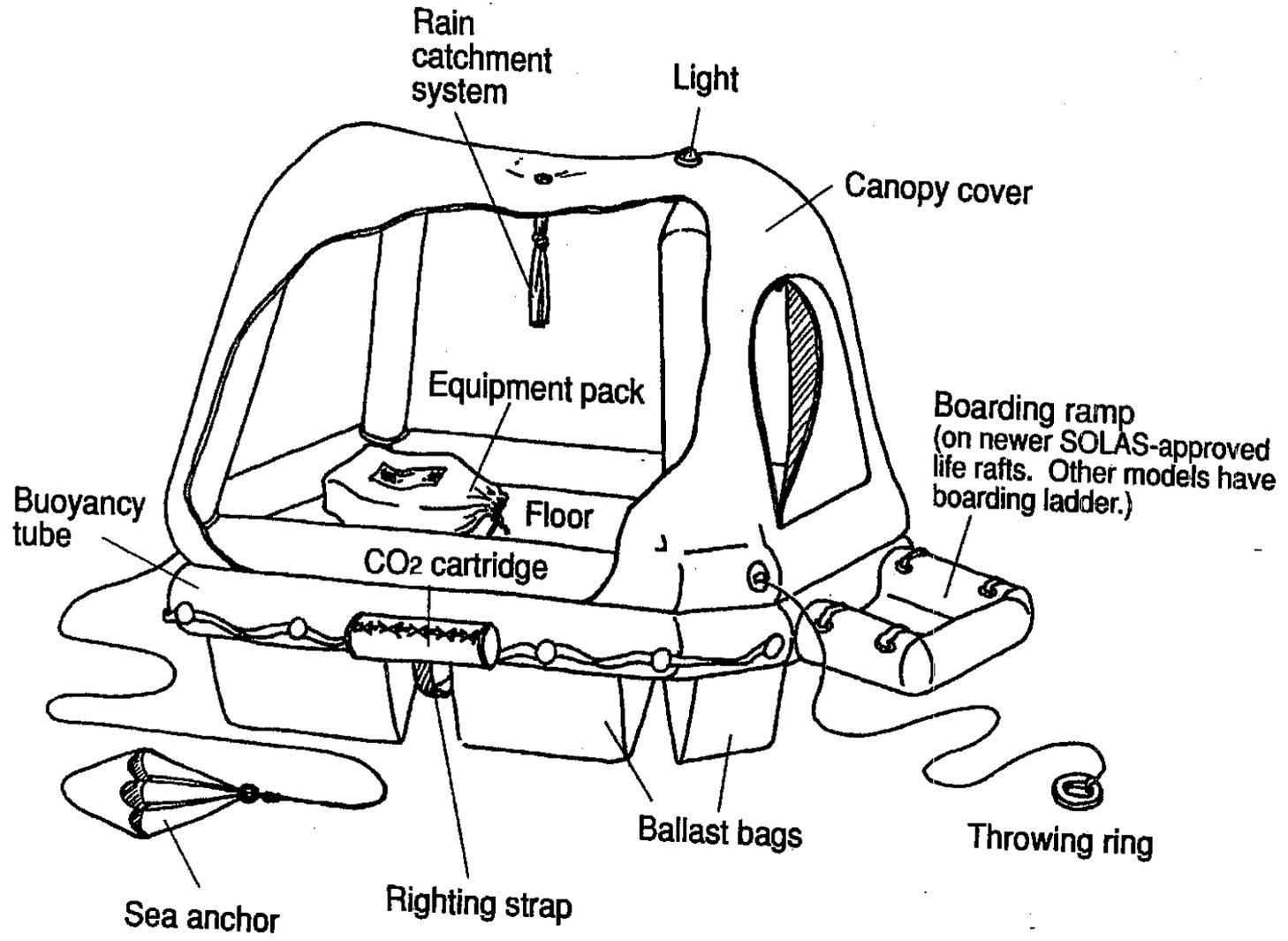
**Location Accuracy
121.5 MHz and 406MHz EPIRBs**

Search area reduced by a factor of 45 times



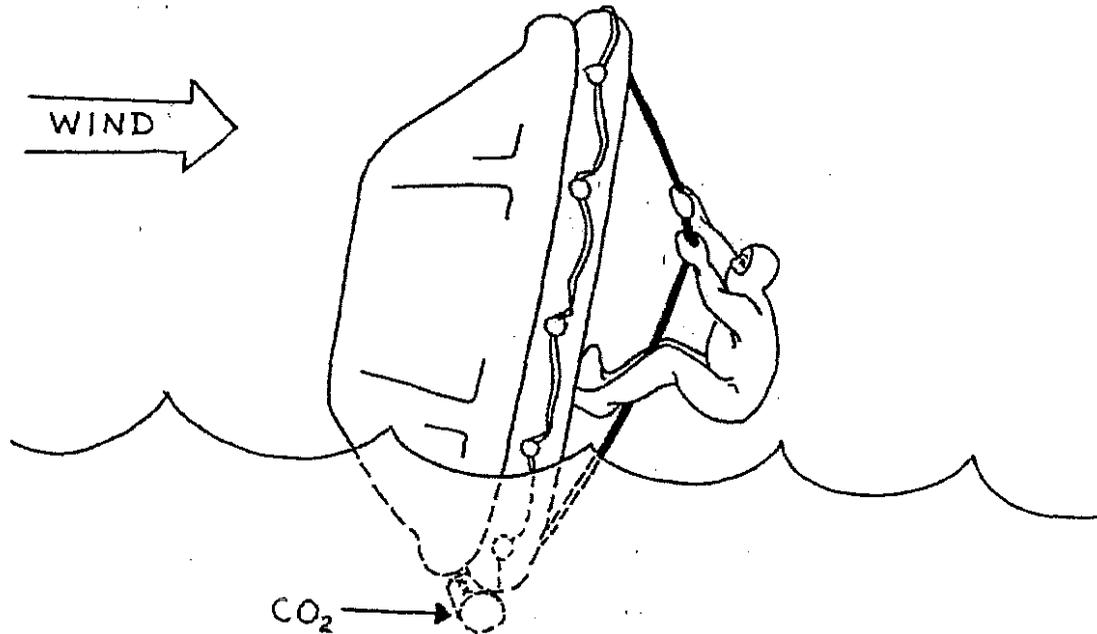
-Continued-

Life Raft Equipment



-Continued-

How to Right A Life Raft



1. **Climb over CO2 cylinder & grasp strap.**
2. **Climb strap & arch backwards, pulling raft back.**
3. **Land on your back & follow strap to boarding ramp.**

-Continued-

DISTRESS BROADCAST

1. Make sure communications equipment is on.
2. Select 156.8 MHz (VHF channel 16), 2182 kHz, 4125 khz or other distress frequency used in your area of operation.
3. Press microphone button and speaking *slowly, clearly, and calmly*

Say: "MAYDAY--MAYDAY--MAYDAY"

Say: "THIS IS F/V _____, _____, _____, OVER."
Vessel Name Vessel Name Vessel Name

Say: "MAYDAY--THIS IS F/V _____."
Vessel Name

Say where you are: "MY POSITION IS _____."
Include Latitude/Longitude, nearby landmarks, distance from known points, LORAN readings, fathometer readings.

State THE NATURE OF THE DISTRESS. Such as: "I am taking on water." or "I have an injured crewmember on board."

State YOUR ESTIMATE OF THE SEAWORTHINESS OF YOUR VESSEL. Such as: "I estimate that we can stay afloat for 2 hours."

State the number of persons on board and the nature of any injuries.
"I HAVE ___ PERSONS ON BOARD."

Describe the vessel: " _____ FEET LONG; _____ ;
Length Type of Vessel or Hull Type

_____ HULL; _____ TRIM; _____ MASTS;
Color Color Number

_____ "
Any Other Distinguishing Features, Survival & Emergency Equipment

Say: "I WILL BE LISTENING ON CHANNEL 16/2182/4125" or whatever frequency you will be able to monitor.

End the message with: "THIS IS _____"
Vessel Name

If situation permits, stand by the radio to await further communications with the Coast Guard or another vessel.

If no answer & situation permits, repeat and try another channel.

FIRE

FIRE & EMERGENCY SIGNAL

**1 LONG CONTINUOUS BLAST NOT LESS THAN 10 SECONDS
ON SHIP'S WHISTLE AND GENERAL ALARM**

- 1. Notify pilothouse immediately to sound alarm & call mayday.**
- 2. Shut off air supply to fire--close hatches, ports, doors, vents, etc.**
- 3. Deenergize electrical systems supplying the affected space, if possible.**
- 4. Assemble portable firefighting equipment. Do not use water on electrical fires. Account for personnel.**
- 5. If fire is in machinery space, shut off fuel supply & use fixed extinguishing system if appropriate.**
- 6. Maneuver vessel to minimize effect of wind on the fire.**
- 7. If unable to control fire, notify Coast Guard & nearby vessels. Prepare to abandon ship.**

-Continued-

PERSON OVERBOARD

SIGNAL
3 LONG BLASTS REPEATED AT LEAST 4 TIMES
ON SHIP'S WHISTLE AND GENERAL ALARM

- 1. Throw a ring life buoy or floatation device as close to the individual as possible.**
- 2. Post a lookout to keep the individual in the water in sight & communicate the distress & position to the pilothouse.**
- 3. Pilothouse watch to sound alarm & maneuver as necessary.**
- 4. Launch a rescue boat or platform to recover the individual if appropriate.**
- 5. Have a crewmember put on a PFD or immersion suit, attach a safety line to the crewmember and have crewmember stand by to enter the water to assist in recovery if appropriate.**
- 6. If the individual overboard is not immediately located, notify the Coast Guard and other vessels in the vicinity; and continue searching until released by the Coast Guard.**

-Continued-

Person Overboard Recovery

According to the office of the National Institute of Occupational Safety & Health-Division of Safety & Research in Anchorage, from January 1991 to September 1992, 24% (almost a quarter!) of all fatalities on commercial fishing vessels were from falls overboard. The prevention aspects of these incidents cannot be stressed enough. Preventive measures such as non-skid decks, checkout systems for crew members going out on deck alone at night, and mandatory use of PFDs for crew on deck would all go a great distance to reduce fatalities. This is especially important when one considers that USCG statistics from 1981 to 1985 show 2,084 persons overboard incidents and 1,463 fatalities. This is more than a 70% mortality rate! If a person does go overboard, the crew's quick and efficient response can make the difference between a successful and unsuccessful recover. Following are three systems for vessel responses to person overboard. Practice has shown that different responses are needed depending upon the situation and type of vessel involved. There are three types of POB situations:

1. **Immediate Action:** POB is within sight at all times and action is taken immediately.
2. **Delayed Action:** POB is reported to the bridge by eyewitness and action is taken after some delay.
3. **Person Missing:** Person is reported to the bridge as missing—longer delay.

There are two types of responses to these situations for smaller vessels.

Single Turn

Rudder hard over to swing stern away from victim in an immediate action situation. Complete 360 degree turn to come up on persons in water.

Williamson Turn

Put rudder hard over to swing stern away from side of vessel fallen from. After deviation from the original course by 60 degrees, put rudder hard over to opposite side and until the vessel is 180 degrees

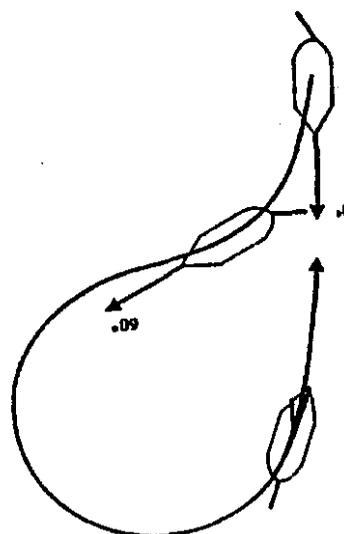
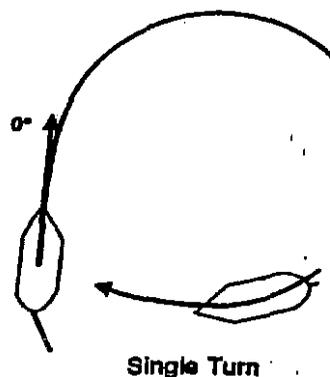
from her original course. Maintain original speed throughout and you will be headed in the exact opposite direction from your original heading.

Immediate Action Situation

Single turn will take the vessel back to the scene of POB most quickly.

Williamson turn requires more time and will temporarily take vessels farther away from POB.

Person Missing and Delayed Action Situation
Williamson Turn will take vessel to scene of POB most surely.



-Continued-

Seven Steps to Survival

In a survival situation, the decisions you make
will be more important than the equipment you carry!

MAKE THE DECISION TO LIVE. FOLLOW THE SEVEN STEPS:

Recognition: Admit that your life is in danger. Act!

Inventory: Decide what can help and hurt. Do first aid.

Shelter: Preserve body heat with materials that insulate and protect you
from the environment.

Signals: Help rescuers find you.

Water: Find a safe source of water, drink two to four quarts a day.

Food: After you are safe and warm, food will help long waits.

Play: Stay busy and keep a positive mental attitude.

Caution and creativity are your best friend...Use them!



*ALASKA MARINE SAFETY EDUCATION ASSOCIATION
P.O. Box 2592, SITKA, ALASKA 99835 (907) 747-3287*

Member organizations: Alaska Department of Fish and Game; Alaska Department of Public Safety; Alaska Vocational Technical Center; Southeast Alaska Regional Health Corporation; Southeast Region Emergency Medical Services Council; University of Alaska, Marine Advisory Program; United States Coast Guard, 17th District.

Appendix B.3. (page 2 of 2).

Use the following set of phonetic codes for transmitting daily and cumulative catch totals during cost recovery fishing:

0	VICTOR	KILO	4	LIMA	PAPA
00	FOXTROT	OSCAR	5	JULIET	UNIFORM
000	ZULU	HOTEL	6	TANGO	ECHO
1	INDIA	MIKE	7	DELTA	YANKEE
2	ROMEO	X-RAY	8	GOLF	QUEBEC
3	ALPHA	BRAVO	9	WHISKEY	NOVEMBER

Appendix B.4. Data Forms.

- Form #1. Pilot House Logs – Cost-Recovery Strings
 - Form #2. Pilot House Logs - Tagging Strings
 - Form #3. ADF&G Tag Recovery Form
 - Form #4. ADF&G Crab Survey Data Form
 - Form #5. Cost-Recovery Daily Tally and Cumulative Catch Record
 - Form #6. Retained Red King Crab Live Weight Data Form
 - Form #7. Autonomous Underwater Video Recorder Event Sequence Worksheet
-

ADF&G WESTWARD REGION TAGGED CRAB RECOVERY FORM

SPECIES _____

FISHERY CODE _____

OBSERVER _____
DOCKSIDE SAMPLER

SEQ. POT NO.	FLOY TAG SERIES & NUMBER	SIZE (mm) KING - CL TANNER - CW	LE S				CAPTURE DATE MO. DAY YEAR	CAPTURE LOCATION (Note E longitude if applicable)				DEPTH (FM)	STATISTICAL AREA	ADF&G VESSEL NO.
			G AL	S E	S H EL	F A TE		N LATITUDE		W LONGITUDE				
								(a)	(b)	(c)	(d)			
1														
2														
3														
4														
5														

- (a) **LEGAL** : 1=Sublegal; 2=Legal. (b) **SEX** : 1=Male; 2=Female. (c) **SHELL AGE** : 0=Soft; 9=new-pliable; 1=New; 2=Old; 3= Very Old.
 (d) **FATE** : 1=Retained for sale; 2=Released alive; 3=Dead (legal male deadloss; or tag received only because sublegal male/female inadvertently retained).
NOTE : If a tagged female crab, record additional information on the back of this form. Record comments for males and females on the back of this form.

	Received Tag or Tagged Crab From: Name, Address & Phone	Received Recovery Location Data From: Name, Address & Phone	Vessel Name	Processor Name	Sampling Date		
					Mo.	Day	Year
1	Need reward <input type="checkbox"/> Issued <input type="checkbox"/>						
2	Need reward <input type="checkbox"/> Issued <input type="checkbox"/>						
3	Need reward <input type="checkbox"/> Issued <input type="checkbox"/>						
4	Need reward <input type="checkbox"/> Issued <input type="checkbox"/>						
5	Need reward <input type="checkbox"/> Issued <input type="checkbox"/>						

Edited by: _____ Date: _____ Entered by: _____ Date: _____

source: shellfish research 06/00

ADF&G WESTWARD REGION TAGGED CRAB RECOVERY FORM
(REVERSE SIDE)

SEQ. POT NO.	EMBRYOS					OTHER	COMMENTS
	COLOR	DEVELOPMENT	CONDITION	% CLUTCH			
1							
2							
3							
4							
5							

LIVE EMBRYO COLOR

- 1-Tan
- 2-Purple
- 3-Brown
- 4-Orange
- 5-Purple-brown
- 6-Pink
- 7-Reddish
- 0-Other; describe in Comments.

EMBRYO DEVELOPMENT

- 1-Uneyed
 - 2-Eyed
- CLUTCH CONDITION**
- 1-Dead embryos not apparent
 - 2-Dead embryos <20 %
 - 3-Dead embryos >20%

PERCENT CLUTCH

- 1-Barren, clean pleopods
- 2-Barren, with empty embryo cases and/or stalks
- 3-Clutch 1-29% full
- 4-Clutch 30-59% full
- 5-Clutch 60-89% full
- 6-Clutch 90-100% full

OTHER

- 3-Nemertean in clutch
- 4-Turbellarians in clutch
- 5-Black mat syndrome
- 6-Bitter crab syndrome
- 7-"Cottage cheese" disease
- 8-Shell rust
- 9-*Briarosaccus callosus* (sac-like parasitic barnacle on king crab abdomens)
- 0-Leatherback: male brown king crab w/soft carapace & is old or very old shell

SPECIES	<u>CHANGES IN EMBRYO COLOR</u>		COMMENTS
	UNEYED	EYED-WELL DEVELOPED	
Red King	purple brown/tan	reddish-purple brown/grayish	
Blue King	purple	pinkish-red	
Golden (brown) king	light orange	tan	
Tanner (<i>C. bairdi</i>)	bright orange	dull colored; orange, brown-tan, orange-purple	
Snow (<i>C. opilio</i>)	bright orange	dull colored; orange, brown-tan, orange-purple	

source: shellfish research 06/00

Appendix B.4. (page 6 of 9) Form 4.

ADF&G CRAB SURVEY DATA FORM

SPECIES _____

VESSEL _____

SEX _____

STRING NUMBER

--	--	--

MEASURER _____

DATE:

--	--	--	--	--	--

BOUY NUMBER

--	--	--

RECORDER _____

SAMPLE TYPE

--

SAMPLE FACTOR

--	--	--

OF

--	--	--

PAGE _____ OF _____

SEQUENTIAL POT NUMBER	SPECIES	SEX	SIZE	CRAB (MM)	FISH (CM)	LEGAL	SHELL	EMBRYOS				OTHER	TAG NUMBER	COMMENTS
								COLOR	DEVEL	COND.	% CLUTCH			
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
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24														

Crab Species 1. <i>L. aequispinus</i> 2. <i>P. camtschaticus</i> 3. <i>P. platypus</i> 4. <i>E. (Isenbeckii)</i> 5. <i>Tanner hybrid</i> 6. <i>C. bairdi</i> 7. <i>C. opilio</i> 8. <i>C. angulatus</i> 9. <i>C. magister</i>	10. <i>L. couesi</i> 11. <i>C. lenneni</i> 12. <i>Paralomis multispina</i> 13. <i>Paralomis varii</i> Sample box 1. Control 2. Treatment A (leg) 3. Treatment B (rostrum)	Sex 1. Male 2. Female Shell Age 0. Non-Pliable 1. New 2. Old 3. Very Old	Legal 1. Sublegal 2. Legal	Live Egg Color 1. Tan 2. Purple 3. Brown 4. Orange 5. Purple-brown 6. Pink 7. Reddish 8. Other describe in comments	Egg Development 1. Uneyed 2. Eyed 3. Hatching Clutch Condition 1. Dead eggs not apparent 2. Dead eggs < 20% 3. Dead eggs > 20%	Percent Clutch 1. Barren, clean pleopods 2. Barren, with empty egg cases and/or stubs 3. Clutch 1-29% full 4. Clutch 30-59% full 5. Clutch 60-89% full 6. Clutch 90-100% full	Other 1. dead 3. Menstrians in clutch 4. Turbellarians in clutch 5. Black mat 6. Bitter crab disease 7. "Colony cheese disease" 8. Shell disease 9. Brittosaccus callosus 0. Leatherback
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Source: ADF&G Shellfish Research

Revised: 09/00

Appendix B.5. Bristol Bay red king crab test fish charter cost-recovery catch of legal crabs per pot pull, 1997 – 1999^a.

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
1997				
07/27/97	46	56.34.93	161.40.06	20
07/29/97	50	56.31.90	161.41.66	20
07/29/97	50	56.30.13	161.43.60	20
07/29/97	43	56.24.58	162.09.11	20
07/29/97	43	56.24.21	162.09.45	20
07/31/97	50	56.27.72	161.49.04	20
07/31/97	50	56.27.50	161.49.15	20
07/31/97	44	56.26.65	161.52.28	20
07/31/97	49	56.24.11	161.53.53	20
08/09/97	51	56.26.88	161.47.34	20
08/09/97	51	56.26.62	161.47.45	20
08/14/97	48	56.39.15	161.34.50	20
08/14/97	48	56.39.15	161.35.05	20
08/16/97	46	56.35.80	161.42.20	20
08/17/97	49	56.34.35	161.38.26	20
08/17/97	49	56.32.98	161.39.83	20
08/17/97	50	56.32.67	161.40.18	20
07/27/97	47	56.20.89	161.56.29	21
07/27/97	41	56.24.48	162.03.02	21
07/31/97	48	56.29.44	161.48.45	21
07/31/97	50	56.28.33	161.48.76	21
07/31/97	49	56.22.50	161.53.26	21
07/31/97	48	56.22.05	161.53.69	21
08/01/97	51	56.25.79	161.50.76	21
08/05/97	49	56.22.34	161.53.42	21
08/09/97	51	56.26.26	161.47.52	21
08/09/97	51	56.25.96	161.47.87	21
08/09/97	51	56.24.47	161.48.96	21
08/14/97	47	56.40.38	161.34.50	21
08/14/97	48	56.39.45	161.35.60	21
07/27/97	50	56.25.60	161.52.60	22
07/27/97	41	56.11.86	162.27.29	22
07/29/97	50	56.25.01	161.53.03	22
07/31/97	50	56.28.75	161.48.57	22
07/31/97	50	56.28.15	161.48.84	22
07/31/97	51	56.26.00	161.50.74	22
07/31/97	49	56.24.21	161.53.43	22
08/01/97	50	56.27.72	161.49.04	22
08/01/97	49	56.22.50	161.53.26	22
08/06/97	48	56.25.88	161.52.63	22
08/09/97	50	56.23.80	161.52.09	22
08/13/97	46	56.37.15	161.34.70	22

-Continued-

Appendix B.5. (2 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/14/97	47	56.40.05	161.35.60	22
08/17/97	48	56.29.17	161.42.54	22
07/27/97	50	56.29.87	161.47.20	23
07/27/97	47	56.20.14	161.57.17	23
07/28/97	44	56.37.34	161.43.70	23
07/29/97	39	56.26.49	162.06.92	23
07/30/97	50	56.29.19	161.47.28	23
07/31/97	51	56.25.49	161.50.79	23
08/01/97	48	56.25.81	161.48.06	23
08/05/97	50	56.27.59	161.47.20	23
08/05/97	47	56.21.36	161.54.20	23
08/09/97	50	56.28.44	161.45.78	23
08/15/97	48	56.39.10	161.36.35	23
08/15/97	49	56.39.10	161.38.55	23
08/17/97	50	56.33.23	161.39.62	23
08/18/97	50	56.27.84	161.46.62	23
07/27/97	47	56.21.56	161.55.57	24
07/29/97	43	56.23.29	162.10.39	24
07/29/97	44	56.23.00	162.10.61	24
07/29/97	46	56.22.38	162.11.29	24
07/30/97	50	56.28.24	161.46.05	24
08/01/97	48	56.25.88	161.52.63	24
08/09/97	50	56.29.37	161.47.24	24
08/14/97	47	56.39.75	161.33.95	24
07/26/97	43	55.59.92	162.51.52	25
07/27/97	49	56.23.13	161.54.15	25
07/27/97	42	56.23.44	162.10.30	25
07/27/97	41	56.15.63	162.19.13	25
07/29/97	50	56.28.75	161.48.57	25
07/29/97	51	56.26.25	161.49.61	25
07/30/97	50	56.29.01	161.47.29	25
07/30/97	49	56.23.98	161.49.25	25
07/31/97	51	56.26.21	161.50.69	25
07/31/97	50	56.25.29	161.52.81	25
07/31/97	47	56.21.83	161.53.93	25
08/01/97	51	56.29.01	161.47.29	25
08/01/97	47	56.26.16	161.52.62	25
08/05/97	49	56.22.50	161.53.26	25
08/06/97	49	56.24.56	161.53.43	25
08/06/97	49	56.22.84	161.54.44	25
08/09/97	50	56.28.13	161.47.14	25
08/13/97	45	56.37.15	161.35.30	25
08/13/97	46	56.36.25	161.36.40	25
08/16/97	46	56.36.10	161.41.65	25
08/16/97	46	56.36.40	161.42.20	25

-Continued-

Appendix B.5. (3 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
07/27/97	50	56.29.91	161.46.45	26
07/27/97	46	56.21.77	162.10.51	26
07/29/97	40	56.25.58	162.08.34	26
07/30/97	50	56.28.02	161.46.31	26
07/31/97	50	56.28.53	161.48.67	26
07/31/97	49	56.24.57	161.51.24	26
07/31/97	50	56.23.01	161.52.76	26
08/01/97	51	56.27.28	161.49.22	26
08/01/97	50	56.25.61	161.50.78	26
08/05/97	49	56.26.26	161.47.57	26
08/09/97	50	56.32.10	161.41.47	26
08/09/97	51	56.25.54	161.47.98	26
08/09/97	49	56.23.01	161.52.92	26
08/13/97	46	56.36.25	161.36.95	26
08/14/97	47	56.38.82	161.33.40	26
08/14/97	48	56.38.82	161.35.05	26
07/27/97	42	56.20.75	162.10.59	27
07/28/97	46	56.37.35	161.38.70	27
07/28/97	46	56.34.83	161.40.28	27
07/28/97	48	56.37.34	161.41.70	27
07/28/97	38	56.39.35	161.43.10	27
07/28/97	50	56.29.89	161.43.87	27
07/29/97	50	56.28.53	161.48.67	27
07/29/97	42	56.23.90	162.09.77	27
07/29/97	42	56.23.74	162.09.92	27
07/30/97	48	56.25.50	161.48.28	27
07/30/97	49	56.24.42	161.48.97	27
07/31/97	49	56.29.15	161.48.47	27
07/31/97	51	56.26.86	161.49.37	27
07/31/97	50	56.24.05	161.51.69	27
07/31/97	50	56.25.44	161.52.81	27
08/01/97	47	56.21.41	161.54.20	27
08/06/97	45	56.27.05	161.52.12	27
08/06/97	47	56.26.16	161.52.62	27
08/09/97	50	56.28.59	161.47.12	27
08/09/97	51	56.27.25	161.47.27	27
08/09/97	48	56.22.66	161.53.26	27
07/27/97	41	56.20.23	162.10.56	28
07/27/97	40	56.18.72	162.12.99	28
07/28/97	50	56.31.00	161.42.55	28
07/30/97	49	56.26.27	161.47.79	28
07/30/97	49	56.23.57	161.49.57	28
07/31/97	50	56.27.94	161.48.93	28
07/31/97	49	56.25.00	161.51.01	28
07/31/97	49	56.24.83	161.51.09	28

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Appendix B.5. (4 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/01/97	50	56.22.66	161.53.11	28
08/01/97	49	56.24.11	161.53.87	28
08/06/97	48	56.23.70	161.54.07	28
08/09/97	50	56.29.89	161.43.87	28
08/09/97	51	56.25.72	161.47.91	28
08/09/97	51	56.24.04	161.49.25	28
08/09/97	51	56.23.84	161.49.43	28
08/15/97	48	56.39.10	161.36.90	28
07/27/97	47	56.34.00	161.40.97	29
07/27/97	48	56.26.05	161.52.34	29
07/29/97	49	56.31.21	161.42.30	29
07/29/97	39	56.26.37	162.07.25	29
07/29/97	38	56.26.23	162.07.50	29
07/30/97	50	56.29.34	161.44.46	29
07/30/97	48	56.25.81	161.48.06	29
07/31/97	51	56.26.46	161.49.54	29
07/31/97	52	56.26.40	161.50.65	29
07/31/97	49	56.24.56	161.53.29	29
08/01/97	50	56.27.42	161.47.48	29
08/01/97	50	56.22.85	161.52.92	29
08/01/97	50	56.25.29	161.53.03	29
08/09/97	49	56.24.05	161.51.69	29
08/09/97	50	56.23.46	161.52.46	29
08/14/97	47	56.39.75	161.35.60	29
08/15/97	47	56.37.90	161.35.80	29
08/15/97	48	56.38.50	161.36.90	29
08/16/97	46	56.36.40	161.40.55	29
08/16/97	46	56.36.70	161.41.10	29
07/27/97	41	56.08.01	162.36.09	30
07/28/97	42	56.37.35	161.31.70	30
07/28/97	49	56.31.44	161.42.07	30
07/29/97	50	56.29.89	161.43.87	30
07/29/97	43	56.23.14	162.10.51	30
07/29/97	45	56.22.70	162.10.92	30
07/29/97	43	56.24.98	162.08.86	30
07/30/97	50	56.28.62	161.45.56	30
07/30/97	50	56.28.82	161.47.32	30
07/30/97	50	56.28.12	161.47.35	30
07/31/97	49	56.24.21	161.51.51	30
07/31/97	51	56.23.80	161.51.93	30
07/31/97	47	56.26.16	161.52.50	30
07/31/97	47	56.25.88	161.52.62	30
08/01/97	49	56.22.34	161.53.42	30
08/01/97	49	56.23.87	161.53.93	30
08/05/97	50	56.27.25	161.47.27	30

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Appendix B.5. (5 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/05/97	49	56.26.17	161.47.69	30
08/06/97	50	56.25.70	161.52.81	30
08/16/97	47	56.36.70	161.40.00	30
07/27/97	44	56.29.39	161.50.41	31
07/27/97	43	56.21.19	162.10.58	31
07/27/97	40	56.19.37	162.11.69	31
07/27/97	41	56.16.93	162.16.48	31
07/29/97	50	56.29.58	161.44.22	31
07/29/97	47	56.29.65	161.48.40	31
07/29/97	48	56.23.23	161.54.19	31
07/29/97	42	56.23.45	162.10.20	31
07/29/97	39	56.26.69	162.06.40	31
07/29/97	42	56.25.16	162.08.72	31
07/29/97	43	56.24.78	162.90.00	31
07/31/97	50	56.31.64	161.41.91	31
07/31/97	51	56.23.29	161.52.46	31
08/01/97	50	56.25.70	161.52.81	31
08/01/97	49	56.22.20	161.53.55	31
08/05/97	49	56.32.10	161.41.47	31
08/05/97	50	56.22.66	161.53.11	31
08/05/97	48	56.22.20	161.53.55	31
08/06/97	48	56.23.23	161.54.33	31
08/09/97	49	56.34.02	161.39.77	31
08/09/97	48	56.22.85	161.53.11	31
08/15/97	48	56.39.10	161.37.45	31
07/27/97	49	56.22.80	161.54.45	32
07/27/97	48	56.22.44	161.54.74	32
07/27/97	47	56.22.17	162.10.48	32
07/28/97	50	56.30.36	161.43.25	32
07/30/97	49	56.27.22	161.47.56	32
07/30/97	48	56.25.67	161.48.17	32
07/30/97	47	56.25.22	161.48.47	32
07/31/97	48	56.25.70	161.52.63	32
07/31/97	50	56.24.75	161.53.15	32
08/01/97	48	56.23.70	161.54.07	32
08/06/97	48	56.23.87	161.53.93	32
08/09/97	50	56.28.02	161.46.31	32
08/09/97	50	56.28.01	161.47.03	32
08/09/97	51	56.24.92	161.48.62	32
08/13/97	46	56.36.55	161.37.50	32
08/16/97	46	56.35.80	161.41.65	32
07/28/97	38	56.37.35	161.29.70	33
07/28/97	48	56.34.63	161.38.90	33
07/28/97	44	56.39.36	161.41.10	33
07/28/97	50	56.27.89	161.46.47	33

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Appendix B.5. (6 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
07/29/97	42	56.23.59	162.10.05	33
07/30/97	50	56.27.76	161.47.41	33
07/31/97	50	56.28.94	161.48.49	33
08/01/97	50	56.27.94	161.48.93	33
08/01/97	49	56.25.00	161.51.01	33
08/01/97	45	56.26.65	161.52.28	33
08/01/97	48	56.21.83	161.53.93	33
08/05/97	51	56.26.21	161.50.69	33
08/05/97	51	56.23.29	161.52.46	33
08/06/97	49	56.24.21	161.53.53	33
08/09/97	50	56.31.00	161.42.55	33
08/09/97	50	56.29.05	161.47.16	33
08/09/97	51	56.27.42	161.47.19	33
08/09/97	52	56.26.41	161.50.62	33
08/15/97	47	56.37.90	161.37.45	33
07/27/97	46	56.26.45	161.52.15	34
07/27/97	43	56.26.00	162.03.30	34
07/27/97	44	56.26.81	162.03.60	34
07/29/97	42	56.24.05	162.09.60	34
08/01/97	48	56.25.67	161.48.17	34
08/05/97	50	56.28.02	161.46.31	34
08/09/97	51	56.26.17	161.47.57	34
08/14/97	48	56.39.45	161.33.40	34
08/17/97	49	56.34.14	161.38.88	34
07/27/97	50	56.25.23	161.52.74	35
07/27/97	41	56.19.65	162.11.20	35
07/28/97	50	56.28.24	161.46.05	35
07/29/97	39	56.26.09	162.07.67	35
07/31/97	51	56.29.89	161.43.87	35
07/31/97	51	56.25.79	161.50.76	35
07/31/97	49	56.23.70	161.53.93	35
08/01/97	51	56.26.21	161.50.69	35
08/01/97	51	56.23.46	161.52.27	35
08/01/97	51	56.23.29	161.52.46	35
08/01/97	47	56.21.53	161.54.13	35
08/05/97	50	56.29.14	161.44.74	35
08/09/97	50	56.31.90	161.41.66	35
08/09/97	51	56.25.61	161.50.78	35
08/09/97	49	56.24.41	161.51.35	35
08/15/97	48	56.39.10	161.35.80	35
07/29/97	50	56.30.80	161.42.80	36
07/29/97	41	56.25.39	162.08.53	36
07/30/97	50	56.27.96	161.47.38	36
07/30/97	49	56.27.42	161.47.48	36
08/01/97	51	56.29.19	161.47.28	36

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Appendix B.5. (7 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/01/97	51	56.28.82	161.47.32	36
08/01/97	52	56.26.40	161.50.65	36
08/01/97	50	56.25.29	161.50.88	36
08/05/97	50	56.28.44	161.45.78	36
08/06/97	46	56.26.32	161.52.29	36
08/06/97	50	56.25.44	161.52.88	36
08/09/97	50	56.28.62	161.45.56	36
08/14/97	48	56.39.15	161.33.95	36
07/27/97	49	56.32.57	161.42.94	37
07/27/97	44	56.26.39	162.03.39	37
07/28/97	50	56.30.80	161.42.80	37
07/30/97	50	56.29.60	161.47.25	37
07/30/97	49	56.26.46	161.47.76	37
07/30/97	48	56.26.00	161.47.94	37
07/31/97	51	56.23.63	161.52.09	37
07/31/97	47	56.26.32	161.52.29	37
08/01/97	49	56.24.61	161.48.80	37
08/01/97	50	56.25.01	161.53.15	37
08/05/97	51	56.25.79	161.50.76	37
08/05/97	50	56.22.85	161.52.92	37
08/09/97	50	56.31.44	161.42.07	37
08/09/97	51	56.24.25	161.49.16	37
07/27/97	44	56.28.65	161.51.15	38
07/27/97	44	56.27.78	161.51.54	38
07/27/97	49	56.24.01	161.53.51	38
07/27/97	37	56.23.97	162.02.95	38
07/28/97	47	56.39.35	161.31.44	38
07/29/97	48	56.34.63	161.38.90	38
07/31/97	49	56.24.41	161.51.35	38
08/01/97	49	56.24.83	161.48.70	38
08/05/97	50	56.27.05	161.47.34	38
08/06/97	45	56.26.65	161.52.28	38
08/06/97	50	56.25.29	161.53.03	38
08/09/97	50	56.30.36	161.43.25	38
08/09/97	50	56.29.34	161.44.46	38
08/09/97	51	56.24.73	161.48.83	38
07/28/97	46	56.37.32	161.42.70	39
07/29/97	39	56.25.90	162.07.88	39
07/30/97	49	56.27.60	161.47.45	39
07/31/97	50	56.32.81	161.40.95	39
07/31/97	44	56.27.89	161.46.47	39
08/01/97	50	56.24.17	161.49.14	39
08/01/97	50	56.26.25	161.49.67	39
08/01/97	50	56.25.49	161.50.79	39
08/05/97	51	56.26.00	161.50.74	39

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Appendix B.5. (8 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/05/97	50	56.24.05	161.51.69	39
07/27/97	44	56.27.35	161.51.75	40
07/27/97	49	56.23.60	161.53.82	40
07/28/97	47	56.37.35	161.37.70	40
07/28/97	48	56.34.48	161.39.10	40
07/29/97	49	56.31.44	161.42.07	40
07/29/97	50	56.30.36	161.43.25	40
07/29/97	50	56.27.50	161.49.15	40
08/01/97	50	56.27.60	161.47.45	40
08/01/97	50	56.28.53	161.48.67	40
08/01/97	47	56.26.18	161.52.50	40
08/01/97	49	56.24.56	161.53.43	40
08/05/97	51	56.25.00	161.51.01	40
08/05/97	51	56.24.83	161.51.09	40
08/05/97	47	56.21.68	161.54.04	40
08/14/97	47	56.39.45	161.34.50	40
07/27/97	47	56.33.27	161.42.03	41
07/27/97	40	56.18.36	162.13.69	41
07/28/97	48	56.39.36	161.32.32	41
07/28/97	46	56.37.35	161.33.70	41
07/28/97	48	56.39.37	161.39.10	41
07/29/97	50	56.32.10	161.41.47	41
07/29/97	50	56.24.75	161.53.15	41
07/29/97	44	56.22.89	162.10.74	41
07/29/97	39	56.26.60	162.06.64	41
07/30/97	49	56.26.12	161.47.89	41
07/31/97	51	56.29.34	161.44.46	41
07/31/97	50	56.27.28	161.49.22	41
07/31/97	51	56.27.07	161.49.59	41
08/01/97	49	56.24.57	161.51.24	41
08/05/97	50	56.30.13	161.43.60	41
08/09/97	50	56.28.24	161.46.05	41
07/29/97	48	56.34.48	161.39.10	42
07/29/97	49	56.29.15	161.48.47	42
07/29/97	50	56.28.94	161.48.49	42
07/29/97	49	56.24.11	161.53.53	42
07/29/97	46	56.22.14	162.11.55	42
07/30/97	50	56.28.44	161.45.78	42
07/30/97	50	56.29.34	161.47.27	42
08/01/97	50	56.24.75	161.53.29	42
08/09/97	50	56.23.63	161.52.27	42
07/28/97	49	56.31.21	161.42.30	43
07/28/97	50	56.30.55	161.43.05	43
07/29/97	49	56.33.49	161.40.36	43
07/29/97	51	56.26.46	161.49.54	43

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Appendix B.5. (9 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
07/30/97	49	56.24.83	161.48.70	43
08/01/97	50	56.28.15	161.48.84	43
08/01/97	50	56.24.42	161.48.97	43
08/05/97	50	56.26.62	161.47.41	43
07/27/97	40	56.17.42	162.15.53	44
07/29/97	49	56.33.13	161.40.73	44
07/29/97	47	56.26.16	161.52.50	44
07/30/97	49	56.26.87	161.47.67	44
08/01/97	51	56.29.34	161.47.27	44
08/01/97	51	56.26.00	161.50.74	44
08/05/97	50	56.29.34	161.44.46	44
08/05/97	50	56.28.15	161.48.84	44
08/05/97	50	56.27.72	161.49.04	44
07/28/97	46	56.37.35	161.34.70	45
07/29/97	49	56.31.64	161.41.91	45
07/29/97	49	56.24.21	161.53.43	45
07/30/97	50	56.28.59	161.47.36	45
07/30/97	48	56.25.05	161.48.57	45
08/01/97	51	56.26.86	161.49.37	45
08/01/97	50	56.24.05	161.51.69	45
08/01/97	45	56.27.05	161.52.12	45
08/05/97	48	56.34.02	161.39.77	45
08/05/97	51	56.28.37	161.47.13	45
08/05/97	51	56.28.83	161.47.16	45
08/05/97	51	56.25.29	161.50.88	45
08/09/97	49	56.23.29	161.52.76	45
07/28/97	49	56.33.73	161.40.10	46
07/29/97	48	56.34.02	161.39.77	46
07/31/97	51	56.28.44	161.45.78	46
08/05/97	50	56.31.00	161.42.55	46
08/05/97	51	56.29.18	161.47.19	46
08/05/97	50	56.24.04	161.49.25	46
08/05/97	50	56.26.86	161.49.37	46
08/05/97	50	56.25.95	161.49.76	46
08/05/97	47	56.21.53	161.54.13	46
08/09/97	50	56.33.49	161.40.36	46
08/16/97	46	56.36.40	161.41.10	46
07/27/97	41	56.16.46	162.17.36	47
07/28/97	46	56.37.35	161.35.70	47
07/28/97	50	56.29.34	161.44.46	47
07/30/97	49	56.23.80	161.49.41	47
08/01/97	50	56.26.46	161.47.76	47
08/01/97	51	56.23.01	161.52.76	47
08/05/97	50	56.28.94	161.48.49	47
08/05/97	50	56.27.94	161.48.93	47

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Appendix B.5. (10 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/05/97	50	56.27.07	161.49.59	47
08/05/97	51	56.25.61	161.50.78	47
08/05/97	47	56.21.83	161.53.93	47
08/09/97	50	56.32.33	161.41.28	47
07/29/97	48	56.33.73	161.40.10	48
07/29/97	49	56.23.70	161.53.93	48
07/31/97	49	56.34.02	161.39.77	48
07/31/97	51	56.29.58	161.44.22	48
08/01/97	51	56.27.07	161.49.59	48
08/05/97	49	56.29.44	161.48.45	48
08/05/97	50	56.28.53	161.48.67	48
08/05/97	50	56.27.28	161.49.22	48
08/05/97	51	56.23.63	161.52.09	48
07/28/97	48	56.39.35	161.36.07	49
07/29/97	49	56.32.81	161.40.95	49
07/29/97	50	56.32.33	161.41.28	49
07/29/97	50	56.27.72	161.49.04	49
07/29/97	50	56.25.29	161.52.81	49
07/29/97	49	56.23.42	161.54.07	49
07/29/97	48	56.23.01	161.54.33	49
07/30/97	50	56.24.17	161.49.14	49
07/31/97	51	56.23.46	161.52.27	49
08/01/97	51	56.28.12	161.47.35	49
08/01/97	50	56.27.22	161.47.56	49
08/01/97	50	56.26.87	161.47.67	49
08/01/97	50	56.29.15	161.48.47	49
08/01/97	48	56.25.05	161.48.57	49
08/05/97	49	56.23.67	161.49.59	49
08/05/97	48	56.22.05	161.53.69	49
08/09/97	50	56.31.64	161.41.91	49
07/28/97	49	56.31.64	161.41.91	50
07/28/97	50	56.30.13	161.43.60	50
07/28/97	50	56.27.92	161.46.31	50
07/29/97	50	56.27.94	161.48.93	50
07/29/97	47	56.26.32	161.52.29	50
07/29/97	47	56.21.94	162.11.69	50
07/31/97	51	56.30.36	161.43.25	50
08/01/97	49	56.26.12	161.47.89	50
08/01/97	49	56.23.57	161.49.57	50
08/01/97	49	56.24.21	161.53.53	50
08/05/97	50	56.28.81	161.45.26	50
08/05/97	50	56.28.33	161.48.76	50
08/05/97	51	56.26.40	161.50.65	50
08/09/97	50	56.33.13	161.40.73	50
07/28/97	49	56.32.57	161.41.11	51

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Appendix B.5. (11 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
07/29/97	49	56.32.56	161.41.10	51
07/29/97	44	56.26.65	161.52.28	51
07/30/97	49	56.26.65	161.47.71	51
07/30/97	49	56.24.61	161.48.85	51
07/31/97	44	56.28.02	161.46.31	51
08/01/97	50	56.28.94	161.48.49	51
08/01/97	50	56.27.50	161.49.15	51
08/01/97	48	56.23.42	161.54.19	51
08/09/97	51	56.26.00	161.50.74	51
08/01/97	49	56.29.44	161.48.45	52
08/01/97	50	56.23.80	161.51.93	52
08/01/97	50	56.25.44	161.52.81	52
08/09/97	50	56.29.18	161.47.19	52
08/09/97	51	56.25.19	161.48.49	52
07/28/97	48	56.34.02	161.39.77	53
07/29/97	50	56.28.33	161.48.76	53
07/29/97	48	56.25.70	161.52.63	53
08/01/97	51	56.29.60	161.47.25	53
08/05/97	50	56.24.25	161.49.16	53
08/05/97	50	56.23.80	161.51.93	53
08/09/97	50	56.29.14	161.44.74	53
07/27/97	47	56.22.61	162.10.42	54
07/28/97	48	56.39.35	161.37.10	54
08/01/97	50	56.27.04	161.47.64	54
08/01/97	50	56.28.33	161.48.76	54
08/05/97	49	56.32.33	161.41.28	54
08/05/97	50	56.26.40	161.47.52	54
08/05/97	50	56.28.75	161.48.57	54
08/09/97	50	56.32.56	161.41.10	54
07/28/97	47	56.37.35	161.36.70	55
07/28/97	50	56.31.90	161.41.66	55
07/28/97	50	56.28.44	161.45.78	55
07/29/97	50	56.25.44	161.52.81	55
07/31/97	50	56.31.90	161.41.66	55
07/31/97	50	56.31.21	161.42.30	55
08/01/97	51	56.28.34	161.47.36	55
08/01/97	49	56.24.41	161.51.35	55
08/05/97	50	56.27.78	161.47.13	55
08/05/97	51	56.25.49	161.50.79	55
08/05/97	51	56.24.41	161.51.35	55
07/27/97	48	56.29.78	161.48.01	56
07/28/97	50	56.32.33	161.41.28	56
07/28/97	50	56.28.81	161.45.26	56
07/30/97	49	56.27.04	161.47.64	56
07/31/97	51	56.30.55	161.43.05	56

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Appendix B.5. (12 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/01/97	47	56.26.32	161.52.29	56
08/05/97	50	56.31.21	161.42.30	56
08/05/97	51	56.28.13	161.47.14	56
08/05/97	51	56.29.37	161.47.24	56
08/05/97	49	56.23.84	161.49.43	56
08/09/97	50	56.30.80	161.42.80	56
07/31/97	44	56.28.24	161.46.05	57
08/01/97	50	56.27.76	161.47.41	57
08/01/97	48	56.25.22	161.48.47	57
08/05/97	50	56.31.90	161.41.66	57
08/05/97	50	56.28.62	161.45.56	57
08/05/97	50	56.28.24	161.46.05	57
08/05/97	51	56.28.01	161.47.03	57
08/05/97	51	56.24.57	161.51.24	57
08/05/97	51	56.23.46	161.52.27	57
08/09/97	50	56.32.81	161.40.95	57
07/28/97	49	56.32.81	161.40.95	58
07/29/97	47	56.25.88	161.52.62	58
07/31/97	50	56.33.73	161.40.10	58
08/01/97	50	56.26.66	161.49.46	58
08/05/97	50	56.31.44	161.42.07	58
08/05/97	48	56.24.92	161.48.62	58
08/05/97	50	56.27.50	161.49.15	58
07/28/97	49	56.33.49	161.40.36	59
07/29/97	50	56.27.07	161.49.29	59
07/31/97	50	56.32.33	161.41.28	59
08/01/97	48	56.25.50	161.48.28	59
08/01/97	49	56.23.98	161.49.25	59
08/01/97	49	56.24.21	161.51.51	59
08/05/97	50	56.26.88	161.47.34	59
08/05/97	48	56.25.43	161.48.29	59
08/05/97	48	56.25.19	161.48.49	59
08/05/97	50	56.24.47	161.48.96	59
07/28/97	48	56.37.34	161.39.70	60
07/28/97	50	56.29.14	161.44.74	60
07/29/97	48	56.29.44	161.48.45	60
07/30/97	50	56.28.34	161.47.36	60
08/05/97	50	56.30.36	161.43.25	60
08/05/97	47	56.29.71	161.48.30	60
08/09/97	50	56.31.21	161.42.30	60
07/29/97	51	56.26.66	161.49.46	61
07/29/97	50	56.26.09	161.49.67	61
07/30/97	50	56.29.14	161.44.74	61
08/09/97	49	56.33.73	161.40.10	61
08/09/97	50	56.30.13	161.43.60	61

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Appendix B.5. (13 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/13/97	46	56.36.85	161.34.70	61
07/28/97	48	56.34.21	161.39.54	62
08/01/97	49	56.26.00	161.47.94	62
08/05/97	50	56.31.64	161.41.91	62
08/05/97	50	56.29.89	161.43.87	62
08/05/97	48	56.29.65	161.48.40	62
07/28/97	35	56.39.34	161.44.10	63
07/29/97	50	56.27.28	161.49.22	63
08/01/97	48	56.29.65	161.48.40	63
08/05/97	48	56.33.73	161.40.10	63
07/28/97	49	56.33.13	161.40.73	64
08/01/97	51	56.28.59	161.47.36	64
08/09/97	50	56.28.37	161.47.13	64
07/28/97	48	56.39.37	161.33.30	65
07/29/97	44	56.27.05	161.52.12	65
08/05/97	48	56.25.72	161.47.91	65
08/05/97	50	56.24.21	161.51.51	65
08/09/97	50	56.29.58	161.44.22	65
08/05/97	49	56.32.56	161.41.10	66
08/05/97	51	56.23.01	161.52.76	66
08/09/97	50	56.28.83	161.47.16	66
08/05/97	51	56.28.59	161.47.12	68
08/01/97	51	56.23.63	161.52.09	69
07/28/97	48	56.37.33	161.40.70	70
07/31/97	51	56.30.80	161.42.80	70
08/01/97	47	56.29.71	161.48.30	70
07/28/97	50	56.32.10	161.41.47	71
07/30/97	50	56.28.81	161.45.26	73
07/31/97	50	56.32.10	161.41.47	73
07/31/97	49	56.34.21	161.39.54	74
07/31/97	50	56.31.44	161.42.07	74
08/01/97	49	56.26.27	161.47.79	74
08/01/97	48	56.23.23	161.54.33	74
08/05/97	48	56.32.81	161.40.95	74
08/05/97	49	56.26.11	161.47.69	74
07/31/97	50	56.33.13	161.40.73	75
07/31/97	51	56.32.56	161.41.10	75
08/05/97	50	56.30.80	161.42.80	75
08/05/97	50	56.29.15	161.48.47	75
08/05/97	49	56.24.73	161.48.83	75
07/31/97	50	56.33.49	161.40.36	76
07/31/97	50	56.31.00	161.42.55	76
07/28/97	48	56.39.34	161.35.14	77
07/31/97	51	56.29.14	161.44.74	77
08/05/97	51	56.29.05	161.47.16	78

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Appendix B.5. (14 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
07/28/97	50	56.28.62	161.45.56	79
08/05/97	48	56.33.13	161.40.73	80
07/28/97	49	56.39.36	161.34.18	82
08/05/97	48	56.33.49	161.40.36	82
08/01/97	50	56.26.65	161.47.71	84
07/31/97	51	56.28.62	161.45.56	85
08/05/97	48	56.25.54	161.47.98	87
07/31/97	51	56.30.13	161.43.60	88
08/05/97	48	56.25.96	161.47.87	88
08/05/97	50	56.29.58	161.44.22	91
1998				
08/03/98	45	56.30.05	161.49.80	20
08/04/98	40	56.42.48	161.50.36	20
08/04/98	41	56.42.75	161.49.97	20
08/06/98	43	56.30.56	161.54.74	20
08/07/98	42	56.31.71	161.37.40	20
08/07/98	49	56.33.49	161.38.53	20
08/07/98	44	56.44.33	161.46.16	20
08/09/98	40	56.43.94	161.45.57	20
08/09/98	44	56.45.21	161.42.53	20
08/10/98	44	56.47.79	161.36.38	20
08/10/98	42	56.48.57	161.33.98	20
08/02/98	44	56.30.24	161.38.90	21
08/02/98	41	56.32.10	161.34.63	21
08/03/98	44	56.26.87	161.52.77	21
08/03/98	42	56.32.80	161.32.80	21
08/03/98	42	56.35.25	161.49.54	21
08/03/98	45	56.37.30	161.44.45	21
08/03/98	44	56.37.33	161.44.86	21
08/03/98	36	56.37.41	161.51.46	21
08/04/98	43	56.40.96	161.53.03	21
08/05/98	43	56.39.84	161.40.53	21
08/05/98	42	56.40.05	161.40.05	21
08/06/98	43	56.30.70	161.54.53	21
08/06/98	44	56.41.71	161.36.59	21
08/07/98	43	56.32.25	161.37.74	21
08/09/98	45	56.46.19	161.40.29	21
08/10/98	43	56.48.39	161.34.63	21
08/10/98	45	56.48.65	161.36.95	21
08/10/98	45	56.48.74	161.36.66	21
08/02/98	44	56.30.40	161.38.52	22
08/03/98	45	56.27.76	161.51.97	22
08/03/98	44	56.34.33	161.48.60	22
08/03/98	41	56.35.40	161.49.84	22
08/04/98	43	56.43.61	161.48.42	22

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Appendix B.5. (15 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/05/98	40	56.40.47	161.40.48	22
08/06/98	45	56.27.82	161.58.67	22
08/07/98	49	56.32.96	161.38.23	22
08/07/98	49	56.33.15	161.38.35	22
08/09/98	40	56.44.15	161.45.04	22
08/09/98	40	56.45.92	161.38.07	22
08/10/98	44	56.50.21	161.32.01	22
08/02/98	52	56.26.35	161.49.60	23
08/02/98	46	56.30.91	161.47.11	23
08/02/98	44	56.31.11	161.36.93	23
08/02/98	50	56.31.57	161.44.32	23
08/02/98	42	56.32.35	161.34.01	23
08/03/98	42	56.32.29	161.34.04	23
08/03/98	42	56.32.40	161.33.73	23
08/03/98	49	56.32.65	161.42.95	23
08/03/98	49	56.36.94	161.39.84	23
08/03/98	43	56.37.36	161.45.21	23
08/04/98	44	56.33.32	161.49.33	23
08/04/98	45	56.34.01	161.47.62	23
08/04/98	40	56.42.35	161.50.66	23
08/04/98	42	56.43.18	161.49.19	23
08/04/98	42	56.43.31	161.48.92	23
08/05/98	49	56.37.92	161.41.17	23
08/06/98	38	56.43.48	161.35.33	23
08/08/98	43	56.47.93	161.34.48	23
08/09/98	44	56.45.33	161.42.29	23
08/09/98	43	56.46.43	161.47.47	23
08/02/98	41	56.31.78	161.35.25	24
08/03/98	45	56.25.97	161.53.62	24
08/03/98	45	56.27.92	161.51.79	24
08/04/98	44	56.32.48	161.51.49	24
08/04/98	44	56.32.87	161.50.59	24
08/05/98	50	56.31.93	161.40.68	24
08/05/98	38	56.40.89	161.40.09	24
08/07/98	42	56.31.87	161.37.53	24
08/07/98	43	56.32.05	161.37.65	24
08/08/98	46	56.47.23	161.39.93	24
08/10/98	44	56.49.64	161.33.87	24
08/02/98	50	56.25.89	161.48.91	25
08/02/98	44	56.30.85	161.37.47	25
08/02/98	48	56.34.87	161.40.49	25
08/03/98	44	56.27.20	161.52.50	25
08/03/98	45	56.28.15	161.51.52	25
08/04/98	44	56.33.08	161.50.04	25
08/04/98	43	56.41.28	161.52.49	25

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Appendix B.5. (16 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/04/98	41	56.41.62	161.51.90	25
08/04/98	41	56.42.91	161.49.67	25
08/05/98	46	56.38.74	161.40.91	25
08/06/98	44	56.29.86	161.55.71	25
08/06/98	43	56.30.25	161.55.19	25
08/06/98	39	56.43.12	161.35.60	25
08/07/98	48	56.32.79	161.38.11	25
08/07/98	44	56.44.50	161.45.59	25
08/08/98	45	56.46.42	161.46.14	25
08/08/98	45	56.46.64	161.45.62	25
08/08/98	41	56.49.73	161.31.56	25
08/09/98	44	56.45.45	161.42.03	25
08/02/98	49	56.25.73	161.48.68	26
08/02/98	45	56.30.02	161.39.50	26
08/02/98	51	56.30.28	161.45.63	26
08/02/98	51	56.30.41	161.45.92	26
08/02/98	42	56.32.62	161.33.37	26
08/03/98	46	56.25.72	161.54.04	26
08/03/98	44	56.27.02	161.52.70	26
08/03/98	48	56.33.57	161.41.86	26
08/03/98	48	56.34.35	161.41.10	26
08/03/98	43	56.34.91	161.49.09	26
08/03/98	46	56.37.24	161.43.72	26
08/04/98	44	56.33.01	161.50.31	26
08/05/98	50	56.32.11	161.40.67	26
08/06/98	44	56.28.94	161.56.98	26
08/06/98	46	56.31.97	161.48.34	26
08/06/98	46	56.33.23	161.45.92	26
08/07/98	49	56.33.86	161.38.84	26
08/07/98	48	56.34.75	161.39.39	26
08/09/98	44	56.45.57	161.41.73	26
08/09/98	44	56.45.80	161.41.17	26
08/10/98	44	56.47.50	161.37.27	26
08/10/98	44	56.50.06	161.32.61	26
08/10/98	44	56.50.13	161.32.33	26
08/02/98	52	56.30.02	161.45.06	27
08/02/98	41	56.31.96	161.34.90	27
08/02/98	43	56.32.91	161.32.74	27
08/03/98	35	56.37.17	161.51.33	27
08/04/98	44	56.33.45	161.49.10	27
08/04/98	43	56.43.90	161.47.87	27
08/05/98	50	56.32.30	161.40.66	27
08/05/98	39	56.40.68	161.40.14	27
08/06/98	46	56.32.92	161.46.50	27
08/06/98	46	56.33.47	161.45.38	27

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Appendix B.5. (17 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/07/98	49	56.33.67	161.38.69	27
08/07/98	49	56.34.22	161.39.01	27
08/07/98	49	56.34.39	161.39.14	27
08/08/98	46	56.45.53	161.43.35	27
08/08/98	45	56.46.29	161.46.45	27
08/08/98	44	56.47.67	161.43.21	27
08/09/98	45	56.46.42	161.46.35	27
08/09/98	45	56.47.34	161.40.00	27
08/15/98	39	56.45.70	161.38.07	27
08/02/98	51	56.25.06	161.47.77	28
08/02/98	50	56.25.56	161.48.46	28
08/02/98	46	56.29.03	161.50.67	28
08/02/98	45	56.31.79	161.46.28	28
08/02/98	49	56.33.38	161.42.08	28
08/02/98	49	56.33.87	161.41.56	28
08/03/98	47	56.36.19	161.39.10	28
08/03/98	49	56.36.94	161.40.18	28
08/05/98	49	56.38.10	161.41.11	28
08/05/98	47	56.38.54	161.40.96	28
08/05/98	38	56.41.08	161.40.04	28
08/06/98	36	56.44.55	161.34.48	28
08/07/98	49	56.34.04	161.38.92	28
08/08/98	45	56.45.97	161.47.23	28
08/08/98	45	56.46.09	161.46.97	28
08/08/98	44	56.47.32	161.44.04	28
08/10/98	44	56.49.86	161.33.21	28
08/10/98	44	56.50.48	161.31.06	28
08/03/98	49	56.32.24	161.43.42	29
08/03/98	47	56.35.72	161.39.57	29
08/03/98	48	56.36.73	161.38.57	29
08/03/98	48	56.36.94	161.40.51	29
08/03/98	42	56.37.42	161.45.59	29
08/04/98	44	56.32.73	161.50.92	29
08/05/98	50	56.37.71	161.41.24	29
08/05/98	36	56.41.50	161.39.86	29
08/05/98	35	56.41.92	161.39.71	29
08/06/98	46	56.41.35	161.36.85	29
08/08/98	45	56.45.25	161.43.90	29
08/08/98	46	56.45.78	161.42.81	29
08/09/98	43	56.46.26	161.38.50	29
08/02/98	45	56.24.16	161.46.51	30
08/02/98	48	56.28.96	161.42.69	30
08/02/98	44	56.30.75	161.37.76	30
08/02/98	45	56.31.20	161.36.66	30
08/02/98	51	56.31.42	161.44.49	30

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Appendix B.5. (18 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/02/98	49	56.33.05	161.42.47	30
08/03/98	47	56.36.38	161.38.95	30
08/03/98	48	56.36.90	161.38.40	30
08/03/98	47	56.37.05	161.41.25	30
08/04/98	46	56.22.10	161.48.27	30
08/04/98	44	56.33.72	161.48.41	30
08/06/98	43	56.30.98	161.54.08	30
08/06/98	47	56.34.16	161.44.05	30
08/06/98	39	56.43.30	161.35.48	30
08/07/98	45	56.44.85	161.44.74	30
08/08/98	45	56.45.13	161.44.19	30
08/08/98	45	56.46.22	161.46.69	30
08/08/98	44	56.46.96	161.44.80	30
08/08/98	42	56.49.01	161.31.57	30
08/09/98	37	56.45.62	161.37.72	30
08/10/98	44	56.47.59	161.36.99	30
08/10/98	44	56.49.34	161.34.82	30
08/02/98	50	56.24.91	161.47.54	31
08/02/98	50	56.30.54	161.46.22	31
08/02/98	42	56.32.21	161.34.36	31
08/03/98	48	56.33.85	161.41.72	31
08/05/98	48	56.36.95	161.41.54	31
08/05/98	44	56.39.66	161.40.57	31
08/06/98	47	56.34.60	161.43.25	31
08/07/98	44	56.44.39	161.45.86	31
08/07/98	45	56.47.41	161.41.85	31
08/09/98	44	56.45.91	161.40.88	31
08/09/98	45	56.46.05	161.40.58	31
08/02/98	50	56.25.22	161.47.97	32
08/02/98	51	56.26.03	161.49.14	32
08/02/98	52	56.26.20	161.49.38	32
08/02/98	47	56.28.58	161.41.80	32
08/02/98	51	56.29.63	161.44.19	32
08/03/98	48	56.37.14	161.43.67	32
08/04/98	44	56.33.20	161.49.75	32
08/04/98	41	56.41.71	161.51.69	32
08/04/98	40	56.41.85	161.51.38	32
08/05/98	49	56.31.75	161.40.69	32
08/05/98	48	56.38.32	161.41.03	32
08/06/98	44	56.29.11	161.56.81	32
08/07/98	45	56.47.30	161.42.10	32
08/08/98	46	56.46.04	161.42.24	32
08/08/98	42	56.49.53	161.32.23	32
08/09/98	44	56.45.70	161.41.43	32
08/02/98	50	56.25.40	161.48.21	33

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Appendix B.5. (19 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/02/98	50	56.29.10	161.42.99	33
08/02/98	46	56.29.65	161.50.05	33
08/02/98	45	56.31.05	161.47.38	33
08/02/98	42	56.32.73	161.45.00	33
08/03/98	45	56.26.30	161.53.32	33
08/03/98	45	56.28.56	161.51.13	33
08/03/98	49	56.33.20	161.42.28	33
08/03/98	47	56.36.02	161.39.25	33
08/03/98	45	56.37.27	161.44.07	33
08/04/98	44	56.32.37	161.51.83	33
08/04/98	42	56.43.02	161.49.49	33
08/04/98	43	56.43.75	161.48.14	33
08/05/98	49	56.32.52	161.40.67	33
08/06/98	43	56.31.26	161.53.67	33
08/06/98	46	56.32.10	161.48.07	33
08/06/98	46	56.32.64	161.47.01	33
08/06/98	46	56.33.34	161.45.65	33
08/06/98	47	56.33.75	161.44.92	33
08/06/98	39	56.42.93	161.35.69	33
08/07/98	45	56.45.59	161.45.78	33
08/08/98	45	56.46.75	161.45.33	33
08/08/98	44	56.48.11	161.36.85	33
08/08/98	43	56.48.64	161.32.58	33
08/08/98	43	56.48.86	161.34.43	33
08/09/98	45	56.47.65	161.40.42	33
08/10/98	44	56.49.96	161.32.91	33
08/16/98	46	56.48.47	161.37.50	33
08/02/98	46	56.28.18	161.51.40	34
08/02/98	44	56.30.50	161.38.29	34
08/02/98	44	56.30.63	161.38.02	34
08/02/98	42	56.33.08	161.32.39	34
08/03/98	45	56.26.10	161.53.61	34
08/06/98	43	56.30.38	161.54.95	34
08/06/98	43	56.30.86	161.54.28	34
08/06/98	46	56.33.09	161.46.20	34
08/06/98	43	56.42.05	161.36.38	34
08/07/98	45	56.45.79	161.45.24	34
08/08/98	45	56.45.61	161.48.07	34
08/08/98	45	56.46.53	161.45.90	34
08/08/98	43	56.46.92	161.37.13	34
08/08/98	43	56.48.69	161.34.00	34
08/09/98	45	56.47.94	161.40.82	34
08/10/98	44	56.47.40	161.37.57	34
08/10/98	45	56.48.33	161.37.83	34
08/10/98	44	56.49.76	161.33.47	34

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Appendix B.5. (20 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/10/98	44	56.50.41	161.31.40	34
08/15/98	39	56.45.87	161.38.25	34
08/15/98	42	56.46.22	161.38.38	34
08/02/98	48	56.24.33	161.46.74	35
08/02/98	46	56.28.42	161.51.91	35
08/02/98	46	56.28.83	161.50.88	35
08/02/98	51	56.29.91	161.44.78	35
08/02/98	43	56.31.34	161.36.29	35
08/02/98	43	56.31.49	161.35.97	35
08/03/98	44	56.34.52	161.48.73	35
08/03/98	46	56.37.20	161.43.36	35
08/04/98	44	56.32.00	161.52.71	35
08/04/98	46	56.32.79	161.48.55	35
08/04/98	47	56.34.22	161.45.46	35
08/04/98	42	56.41.46	161.52.20	35
08/04/98	40	56.41.98	161.51.16	35
08/04/98	43	56.44.05	161.47.63	35
08/05/98	47	56.34.66	161.40.64	35
08/06/98	46	56.34.88	161.42.64	35
08/06/98	46	56.41.15	161.36.99	35
08/07/98	45	56.45.18	161.46.91	35
08/08/98	45	56.45.86	161.47.53	35
08/08/98	43	56.47.60	161.35.38	35
08/08/98	43	56.48.04	161.34.21	35
08/08/98	43	56.48.31	161.33.57	35
08/08/98	42	56.49.44	161.32.56	35
08/09/98	45	56.47.49	161.40.22	35
08/10/98	45	56.48.44	161.37.55	35
08/10/98	45	56.48.85	161.36.33	35
08/10/98	44	56.50.32	161.31.70	35
08/02/98	46	56.27.81	161.51.76	36
08/02/98	44	56.31.36	161.48.04	36
08/02/98	42	56.32.49	161.33.67	36
08/03/98	44	56.27.47	161.52.20	36
08/04/98	47	56.35.51	161.42.82	36
08/05/98	45	56.39.18	161.40.74	36
08/05/98	35	56.41.73	161.39.76	36
08/05/98	45	56.46.14	161.43.62	36
08/06/98	44	56.29.66	161.55.99	36
08/06/98	44	56.30.07	161.55.43	36
08/06/98	46	56.32.24	161.47.79	36
08/06/98	46	56.32.51	161.47.27	36
08/06/98	47	56.34.74	161.42.85	36
08/06/98	43	56.41.88	161.36.49	36
08/06/98	42	56.42.41	161.36.15	36

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Appendix B.5. (21 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/06/98	36	56.44.95	161.34.23	36
08/07/98	45	56.45.70	161.45.51	36
08/08/98	43	56.46.84	161.37.46	36
08/08/98	43	56.47.04	161.36.74	36
08/08/98	44	56.47.42	161.43.77	36
08/08/98	45	56.47.77	161.37.08	36
08/08/98	44	56.48.21	161.36.53	36
08/08/98	43	56.48.55	161.32.91	36
08/08/98	41	56.49.64	161.31.84	36
08/15/98	38	56.45.52	161.37.78	36
08/02/98	45	56.26.53	161.53.12	37
08/02/98	46	56.27.99	161.51.58	37
08/02/98	49	56.30.65	161.46.51	37
08/03/98	45	56.30.42	161.49.22	37
08/03/98	49	56.32.82	161.42.85	37
08/03/98	45	56.34.13	161.48.54	37
08/03/98	47	56.37.02	161.40.92	37
08/03/98	49	56.37.11	161.42.33	37
08/04/98	46	56.33.05	161.48.00	37
08/04/98	45	56.33.83	161.48.07	37
08/04/98	47	56.34.93	161.44.02	37
08/05/98	49	56.33.31	161.40.58	37
08/06/98	44	56.28.85	161.57.17	37
08/06/98	46	56.32.37	161.47.53	37
08/06/98	47	56.34.03	161.44.29	37
08/06/98	45	56.41.51	161.36.72	37
08/06/98	36	56.44.05	161.34.88	37
08/06/98	36	56.44.37	161.34.62	37
08/07/98	49	56.34.59	161.39.25	37
08/07/98	45	56.45.38	161.46.33	37
08/08/98	43	56.46.74	161.37.78	37
08/08/98	44	56.47.53	161.43.51	37
08/08/98	45	56.47.84	161.37.78	37
08/08/98	44	56.48.14	161.42.07	37
08/08/98	44	56.48.39	161.35.93	37
08/10/98	44	56.49.45	161.34.53	37
08/10/98	44	56.49.55	161.34.22	37
08/15/98	43	56.46.37	161.38.94	37
08/02/98	45	56.27.65	161.51.91	38
08/02/98	42	56.31.66	161.35.53	38
08/02/98	48	56.36.19	161.39.09	38
08/03/98	44	56.26.50	161.53.12	38
08/03/98	44	56.26.67	161.52.93	38
08/03/98	45	56.32.93	161.47.88	38
08/03/98	47	56.34.83	161.40.55	38

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Appendix B.5. (22 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/04/98	46	56.33.18	161.47.75	38
08/04/98	44	56.33.57	161.48.76	38
08/04/98	45	56.34.16	161.47.27	38
08/04/98	47	56.34.68	161.44.59	38
08/05/98	49	56.32.72	161.40.62	38
08/06/98	46	56.33.62	161.45.09	38
08/06/98	46	56.40.80	161.37.25	38
08/06/98	40	56.42.75	161.35.84	38
08/07/98	45	56.45.48	161.46.04	38
08/08/98	43	56.47.30	161.36.12	38
08/08/98	44	56.47.90	161.42.67	38
08/08/98	42	56.48.81	161.32.27	38
08/08/98	41	56.49.92	161.31.97	38
08/09/98	37	56.45.44	161.37.49	38
08/09/98	45	56.46.43	161.43.42	38
08/10/98	45	56.48.99	161.36.97	38
08/10/98	45	56.49.18	161.35.26	38
08/02/98	47	56.28.72	161.42.14	39
08/02/98	46	56.29.22	161.50.50	39
08/02/98	51	56.29.25	161.43.28	39
08/02/98	46	56.29.46	161.50.27	39
08/02/98	50	56.31.93	161.43.85	39
08/02/98	48	56.34.41	161.41.00	39
08/03/98	45	56.33.54	161.48.19	39
08/03/98	34	56.36.74	161.51.08	39
08/03/98	34	56.37.00	161.51.21	39
08/04/98	44	56.32.11	161.52.41	39
08/04/98	47	56.34.41	161.45.13	39
08/06/98	44	56.31.58	161.53.27	39
08/06/98	46	56.40.97	161.37.15	39
08/08/98	45	56.45.39	161.43.64	39
08/08/98	46	56.45.69	161.43.11	39
08/08/98	44	56.47.08	161.44.54	39
08/08/98	44	56.47.79	161.42.98	39
08/08/98	43	56.48.77	161.34.71	39
08/09/98	38	56.45.75	161.37.89	39
08/15/98	41	56.46.02	161.38.47	39
08/02/98	44	56.24.00	161.45.29	40
08/02/98	49	56.24.58	161.47.06	40
08/02/98	46	56.25.95	161.53.60	40
08/02/98	47	56.28.44	161.41.51	40
08/02/98	46	56.30.37	161.49.38	40
08/02/98	44	56.31.20	161.47.69	40
08/02/98	51	56.32.26	161.43.45	40
08/02/98	50	56.32.86	161.42.69	40

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Appendix B.5. (23 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/03/98	48	56.36.55	161.38.76	40
08/03/98	48	56.37.09	161.41.61	40
08/05/98	49	56.33.68	161.40.58	40
08/05/98	50	56.37.47	161.41.33	40
08/06/98	44	56.31.29	161.53.45	40
08/06/98	46	56.32.78	161.46.75	40
08/06/98	47	56.34.31	161.43.78	40
08/06/98	47	56.34.47	161.43.49	40
08/06/98	37	56.43.85	161.35.04	40
08/08/98	44	56.47.21	161.44.29	40
08/08/98	43	56.48.39	161.33.20	40
08/09/98	44	56.46.42	161.47.10	40
08/10/98	44	56.50.57	161.30.69	40
08/02/98	46	56.30.18	161.49.57	41
08/02/98	48	56.34.68	161.40.69	41
08/03/98	42	56.32.94	161.32.50	41
08/04/98	44	56.32.24	161.52.14	41
08/04/98	43	56.41.09	161.52.82	41
08/04/98	42	56.43.47	161.48.69	41
08/06/98	46	56.35.18	161.42.13	41
08/06/98	42	56.42.24	161.36.26	41
08/06/98	41	56.42.58	161.36.01	41
08/07/98	45	56.45.94	161.44.90	41
08/07/98	45	56.46.67	161.43.42	41
08/07/98	45	56.47.53	161.41.59	41
08/08/98	44	56.48.29	161.36.23	41
08/08/98	43	56.49.05	161.33.82	41
08/10/98	44	56.49.47	161.38.89	41
08/02/98	46	56.28.65	161.51.04	42
08/02/98	48	56.30.78	161.46.82	42
08/02/98	49	56.33.21	161.42.29	42
08/03/98	49	56.32.47	161.43.19	42
08/03/98	45	56.33.14	161.47.99	42
08/04/98	46	56.33.70	161.46.60	42
08/06/98	43	56.31.15	161.53.85	42
08/07/98	45	56.45.28	161.46.62	42
08/08/98	44	56.48.01	161.37.17	42
08/08/98	44	56.48.01	161.42.39	42
08/08/98	43	56.49.14	161.33.48	42
08/15/98	45	56.46.68	161.39.34	42
08/02/98	51	56.29.37	161.43.59	43
08/02/98	50	56.29.78	161.44.48	43
08/03/98	47	56.35.52	161.39.86	43
08/03/98	48	56.37.07	161.38.23	43
08/03/98	47	56.37.15	161.43.01	43

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Appendix B.5. (24 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/05/98	50	56.33.50	161.40.59	43
08/05/98	46	56.38.97	161.40.83	43
08/07/98	45	56.46.81	161.43.14	43
08/08/98	43	56.47.80	161.34.87	43
08/08/98	44	56.48.50	161.35.62	43
08/09/98	45	56.46.42	161.45.91	43
08/09/98	45	56.46.44	161.44.07	43
08/09/98	45	56.47.78	161.40.61	43
08/02/98	45	56.27.25	161.52.39	44
08/02/98	50	56.32.10	161.43.66	44
08/04/98	47	56.34.81	161.44.32	44
08/05/98	49	56.31.38	161.40.67	44
08/05/98	49	56.31.58	161.40.67	44
08/06/98	46	56.35.02	161.42.40	44
08/06/98	37	56.43.65	161.35.18	44
08/07/98	45	56.45.00	161.44.43	44
08/07/98	45	56.45.07	161.47.16	44
08/07/98	45	56.46.93	161.42.98	44
08/07/98	45	56.47.05	161.42.65	44
08/08/98	46	56.46.19	161.41.01	44
08/08/98	44	56.48.59	161.35.32	44
08/08/98	42	56.49.70	161.30.95	44
08/04/98	40	56.42.23	161.50.90	45
08/05/98	49	56.33.14	161.40.59	45
08/05/98	49	56.33.88	161.40.56	45
08/05/98	49	56.34.06	161.40.53	45
08/05/98	48	56.34.24	161.40.52	45
08/05/98	49	56.37.18	161.41.42	45
08/06/98	47	56.33.87	161.44.64	45
08/06/98	36	56.44.21	161.34.75	45
08/08/98	45	56.45.61	161.47.82	45
08/09/98	45	56.46.45	161.43.84	45
08/09/98	45	56.47.20	161.39.76	45
08/10/98	44	56.50.63	161.30.39	45
08/02/98	51	56.29.50	161.43.90	46
08/02/98	46	56.29.82	161.49.85	46
08/04/98	46	56.33.57	161.46.88	46
08/04/98	47	56.35.10	161.43.69	46
08/05/98	47	56.34.44	161.40.57	46
08/07/98	47	56.34.93	161.39.51	46
08/08/98	42	56.48.90	161.31.89	46
08/08/98	42	56.49.29	161.30.99	46
08/08/98	42	56.49.33	161.32.86	46
08/08/98	42	56.49.57	161.30.28	46
08/09/98	44	56.46.42	161.46.76	46

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Appendix B.5. (25 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/09/98	45	56.46.43	161.43.02	46
08/10/98	38	56.51.06	161.38.88	46
08/15/98	44	56.46.53	161.39.08	46
08/02/98	46	56.25.76	161.53.75	47
08/02/98	52	56.30.16	161.45.34	47
08/04/98	44	56.32.62	161.51.20	47
08/04/98	46	56.33.85	161.46.32	47
08/04/98	48	56.35.82	161.42.18	47
08/06/98	44	56.29.48	161.56.27	47
08/07/98	47	56.35.10	161.39.62	47
08/07/98	46	56.35.25	161.39.69	47
08/07/98	45	56.44.96	161.47.48	47
08/09/98	43	56.46.42	161.38.71	47
08/09/98	45	56.46.42	161.45.50	47
08/02/98	44	56.26.88	161.52.71	48
08/04/98	47	56.34.12	161.45.74	48
08/05/98	47	56.35.63	161.40.65	48
08/06/98	44	56.29.30	161.56.55	48
08/07/98	46	56.35.43	161.39.78	48
08/08/98	45	56.46.86	161.45.06	48
08/09/98	44	56.48.09	161.41.04	48
08/10/98	45	56.49.08	161.35.58	48
08/15/98	45	56.48.16	161.41.17	48
08/02/98	48	56.35.96	161.39.31	49
08/07/98	47	56.35.79	161.40.99	49
08/08/98	44	56.47.93	161.37.46	49
08/09/98	45	56.46.43	161.42.91	49
08/10/98	43	56.50.27	161.38.87	49
08/03/98	45	56.33.74	161.48.28	50
08/04/98	46	56.33.31	161.47.50	50
08/04/98	46	56.33.99	161.46.02	50
08/04/98	43	56.44.16	161.47.43	50
08/05/98	50	56.32.95	161.40.61	50
08/07/98	45	56.46.16	161.44.44	50
08/07/98	45	56.46.41	161.43.89	50
08/07/98	45	56.46.54	161.43.66	50
08/08/98	46	56.45.94	161.42.47	50
08/08/98	43	56.48.96	161.34.12	50
08/08/98	42	56.49.44	161.30.60	50
08/09/98	45	56.46.42	161.44.31	50
08/10/98	45	56.47.88	161.38.87	50
08/02/98	47	56.25.58	161.53.90	51
08/02/98	47	56.35.49	161.39.79	51
08/03/98	49	56.37.07	161.42.00	51
08/04/98	43	56.44.30	161.47.16	51

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Appendix B.5. (26 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/05/98	45	56.44.59	161.46.77	51
08/07/98	45	56.44.63	161.45.27	51
08/08/98	46	56.46.32	161.41.70	51
08/08/98	43	56.47.46	161.35.75	51
08/08/98	41	56.49.83	161.31.25	51
08/15/98	46	56.47.15	161.39.97	51
08/02/98	45	56.26.72	161.52.91	52
08/05/98	47	56.35.99	161.40.67	52
08/07/98	47	56.35.62	161.39.87	52
08/08/98	43	56.47.18	161.36.40	52
08/08/98	44	56.48.28	161.42.79	52
08/08/98	42	56.49.23	161.33.18	52
08/10/98	40	56.50.70	161.38.88	52
08/15/98	46	56.47.00	161.39.75	52
08/02/98	45	56.27.05	161.52.54	53
08/02/98	48	56.28.83	161.42.41	53
08/02/98	50	56.32.50	161.43.15	53
08/04/98	47	56.35.25	161.43.42	53
08/04/98	47	56.35.40	161.43.10	53
08/05/98	46	56.35.46	161.40.64	53
08/05/98	45	56.44.46	161.47.01	53
08/05/98	45	56.44.72	161.46.50	53
08/05/98	45	56.45.62	161.44.67	53
08/05/98	45	56.47.20	161.41.42	53
08/07/98	45	56.46.29	161.44.13	53
08/10/98	39	56.50.88	161.38.91	53
08/15/98	45	56.48.32	161.41.35	53
08/02/98	50	56.32.67	161.42.95	54
08/02/98	47	56.35.73	161.39.55	54
08/03/98	45	56.33.34	161.48.08	54
08/04/98	47	56.35.65	161.42.50	54
08/05/98	45	56.44.86	161.46.23	54
08/08/98	43	56.47.67	161.35.12	54
08/09/98	45	56.46.45	161.42.46	54
08/09/98	41	56.48.89	161.41.97	54
08/09/98	41	56.48.89	161.41.97	54
08/10/98	44	56.49.05	161.38.87	54
08/15/98	45	56.47.45	161.40.48	54
08/02/98	47	56.35.28	161.40.06	55
08/08/98	42	56.49.15	161.31.29	55
08/09/98	45	56.47.06	161.39.52	55
08/09/98	43	56.48.40	161.41.40	55
08/15/98	42	56.49.00	161.42.09	55
08/02/98	45	56.26.13	161.53.43	56
08/02/98	51	56.31.77	161.44.09	56
08/02/98	49	56.33.57	161.41.86	56

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Appendix B.5. (27 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/05/98	47	56.35.85	161.40.67	56
08/05/98	45	56.45.12	161.45.73	56
08/05/98	45	56.45.25	161.45.46	56
08/09/98	45	56.46.75	161.39.11	56
08/09/98	41	56.49.03	161.42.16	56
08/10/98	45	56.47.71	161.38.87	56
08/03/98	47	56.34.65	161.40.77	57
08/04/98	48	56.35.94	161.41.90	57
08/05/98	46	56.35.26	161.40.63	57
08/07/98	45	56.46.06	161.44.70	57
08/15/98	46	56.47.31	161.40.17	57
08/05/98	45	56.44.99	161.46.98	58
08/10/98	37	56.51.85	161.38.89	58
08/15/98	45	56.48.45	161.41.63	58
08/15/98	44	56.48.63	161.41.82	58
08/02/98	48	56.34.20	161.41.24	59
08/03/98	45	56.33.92	161.48.41	59
08/05/98	45	56.45.38	161.45.18	59
08/05/98	45	56.46.01	161.43.89	59
08/15/98	45	56.47.95	161.41.10	59
08/03/98	47	56.35.25	161.40.12	60
08/05/98	45	56.45.49	161.44.94	60
08/05/98	45	56.46.41	161.43.05	60
08/09/98	45	56.46.46	161.40.70	60
08/05/98	45	56.45.76	161.44.40	61
08/10/98	44	56.48.68	161.38.87	61
08/10/98	43	56.50.07	161.38.86	61
08/04/98	47	56.34.53	161.44.89	62
08/09/98	42	56.48.72	161.41.79	62
08/15/98	45	56.47.62	161.40.67	62
08/05/98	45	56.46.27	161.43.34	63
08/05/98	45	56.46.55	161.42.80	63
08/09/98	45	56.46.46	161.42.08	63
08/10/98	45	56.47.51	161.38.82	63
08/15/98	45	56.46.85	161.39.53	63
08/15/98	45	56.47.77	161.40.90	63
08/15/98	43	56.48.80	161.41.97	63
08/02/98	47	56.35.08	161.40.25	64
08/10/98	44	56.48.49	161.38.87	64
08/10/98	44	56.48.86	161.38.87	64
08/10/98	38	56.51.28	161.38.87	64
08/16/98	46	56.48.60	161.37.30	64
08/02/98	45	56.26.32	161.53.28	65
08/03/98	47	56.35.08	161.40.30	65
08/05/98	46	56.34.85	161.40.67	65

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Appendix B.5. (28 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
08/09/98	43	56.48.58	161.41.63	65
08/05/98	45	56.45.89	161.44.13	66
08/10/98	37	56.51.65	161.38.88	66
08/10/98	44	56.48.11	161.38.87	67
08/10/98	44	56.49.87	161.38.88	67
08/10/98	36	56.52.11	161.38.88	67
08/10/98	42	56.50.47	161.38.87	68
08/10/98	37	56.51.45	161.38.90	69
08/09/98	45	56.46.44	161.39.34	71
08/09/98	44	56.46.57	161.38.87	71
08/09/98	45	56.46.45	161.40.05	73
08/09/98	44	56.48.25	161.41.23	73
08/08/98	46	56.46.46	161.41.45	74
08/16/98	46	56.48.63	161.36.85	74
08/05/98	45	56.46.83	161.42.19	75
08/16/98	45	56.48.82	161.36.25	75
08/05/98	45	56.47.07	161.41.66	76
08/05/98	45	56.47.34	161.41.18	76
08/16/98	46	56.48.72	161.36.55	76
08/05/98	45	56.46.95	161.41.92	77
08/10/98	44	56.48.31	161.38.87	77
08/10/98	44	56.49.70	161.38.89	78
08/05/98	45	56.46.70	161.42.50	79
08/16/98	46	56.48.40	161.37.83	80
08/10/98	44	56.49.27	161.38.88	83
08/09/98	45	56.46.45	161.41.74	93
08/09/98	45	56.46.44	161.41.41	99
1999				
09/26/99	36	56.46.95	162.45.65	20
09/26/99	36	56.46.96	162.51.26	20
09/29/99	45	56.41.08	161.52.79	20
09/29/99	45	56.48.79	161.40.92	20
10/01/99	41	56.36.94	162.58.60	20
10/01/99	42	56.41.06	163.20.44	20
10/01/99	42	56.48.63	163.12.83	20
10/01/99	42	56.49.47	163.11.69	20
10/03/99	37	56.39.38	163.18.13	20
10/03/99	37	56.40.82	163.22.48	20
10/03/99	37	56.46.74	163.05.07	20
10/03/99	37	56.51.41	163.06.82	20
10/04/99	37	56.41.15	163.17.74	20
10/04/99	37	56.27.81	163.37.89	20
10/04/99	37	56.23.16	163.45.50	20
10/07/99	40	56.37.89	163.30.06	20
10/07/99	38	56.52.43	163.14.34	20

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Appendix B.5. (29 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
10/07/99	38	56.53.69	163.20.55	20
10/07/99	38	56.53.56	163.19.90	20
10/08/99	39	56.44.08	163.24.40	20
09/28/99	45	56.47.22	161.41.83	21
09/29/99	45	56.41.80	161.52.40	21
09/29/99	45	56.49.69	161.37.24	21
10/01/99	42	56.35.31	163.10.91	21
10/01/99	42	56.39.55	163.17.04	21
10/01/99	42	56.41.94	163.19.23	21
10/01/99	42	56.50.26	163.10.49	21
10/02/99	40	56.37.19	163.00.96	21
10/02/99	40	56.39.25	162.52.68	21
10/03/99	37	56.39.39	163.19.17	21
10/03/99	38	56.46.67	163.02.40	21
10/03/99	38	56.46.73	163.40.01	21
10/07/99	40	56.38.09	163.36.42	21
10/07/99	38	56.41.77	163.17.57	21
10/07/99	38	56.46.76	163.03.60	21
10/08/99	39	56.43.38	163.08.40	21
10/01/99	42	56.38.87	163.17.91	22
10/01/99	43	56.48.22	163.13.37	22
10/02/99	40	56.34.79	162.42.62	22
10/02/99	40	56.34.31	162.44.26	22
10/02/99	39	56.34.38	162.43.88	22
10/02/99	40	56.34.91	162.42.28	22
10/03/99	38	56.39.38	163.21.65	22
10/03/99	38	56.41.23	163.21.69	22
10/03/99	38	56.49.66	163.15.76	22
10/03/99	38	56.46.67	163.10.87	22
10/03/99	37	56.46.73	163.04.52	22
10/03/99	37	56.49.39	163.08.99	22
10/03/99	37	56.52.92	163.05.15	22
10/04/99	37	56.41.09	163.14.31	22
10/04/99	37	56.49.41	163.30.47	22
10/04/99	36	56.27.42	163.38.53	22
10/07/99	40	56.52.52	163.18.52	22
10/07/99	40	56.41.01	163.28.58	22
10/07/99	40	56.38.02	163.35.85	22
10/07/99	37	56.41.73	163.13.99	22
10/07/99	37	56.56.10	163.10.20	22
10/01/99	43	56.37.25	162.57.70	23
10/01/99	43	56.37.07	162.58.14	23
10/01/99	43	56.39.77	163.16.78	23
10/01/99	43	56.40.17	163.21.45	23
10/01/99	43	56.40.64	163.20.96	23

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Appendix B.5. (30 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
10/01/99	43	56.46.94	163.14.91	23
10/02/99	40	56.37.23	163.02.54	23
10/03/99	37	56.39.35	163.20.58	23
10/03/99	37	56.39.10	163.25.44	23
10/03/99	36	56.40.22	163.23.66	23
10/03/99	36	56.50.21	163.12.33	23
10/04/99	36	56.38.35	163.19.86	23
10/04/99	41	56.55.69	163.01.24	23
10/07/99	40	56.39.96	163.31.99	23
10/07/99	40	56.37.99	163.34.12	23
10/07/99	37	56.41.63	163.09.63	23
10/07/99	37	56.45.97	163.04.70	23
10/07/99	37	56.47.28	163.02.79	23
10/08/99	38	56.44.62	163.23.82	23
10/08/99	38	56.45.13	163.23.10	23
09/28/99	45	56.47.66	161.42.24	24
09/29/99	45	56.41.58	161.52.55	24
10/01/99	42	56.39.01	162.52.95	24
10/01/99	42	56.36.99	163.05.20	24
10/03/99	36	56.39.36	163.22.17	24
10/03/99	36	56.46.71	163.03.46	24
10/04/99	41	56.55.04	163.03.15	24
09/28/99	45	56.48.61	161.37.04	25
09/29/99	45	56.40.58	161.52.04	25
10/01/99	42	56.39.11	163.17.65	25
10/03/99	36	56.39.39	163.17.11	25
10/03/99	36	56.40.59	163.22.85	25
10/04/99	41	56.38.17	163.20.56	25
10/04/99	41	56.36.36	163.26.71	25
10/07/99	40	56.40.83	163.29.04	25
10/08/99	37	56.46.27	163.04.43	25
10/08/99	37	56.54.27	163.12.72	25
09/26/99	36	56.41.87	162.31.51	26
09/29/99	45	56.42.06	161.52.33	26
10/01/99	42	56.39.33	163.17.35	26
10/02/99	40	56.34.77	162.42.51	26
10/03/99	36	56.46.70	163.02.92	26
10/04/99	41	56.41.08	163.10.66	26
10/04/99	41	56.37.57	163.22.62	26
10/07/99	40	56.40.26	163.30.99	26
10/07/99	40	56.39.55	163.33.51	26
10/07/99	40	56.39.28	163.34.52	26
10/07/99	40	56.37.95	163.32.37	26
10/08/99	36	56.41.74	163.14.60	26
10/08/99	36	56.47.03	163.03.20	26

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Appendix B.5. (31 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
10/08/99	38	56.44.36	163.24.13	26
10/08/99	38	56.44.88	163.23.48	26
10/08/99	38	56.50.37	163.16.14	26
09/28/99	45	56.46.61	161.41.20	27
09/28/99	45	56.50.76	161.37.97	27
10/01/99	42	56.37.44	163.19.57	27
10/02/99	40	56.37.26	163.03.55	27
10/03/99	36	56.51.68	163.06.61	27
10/04/99	41	56.40.11	163.30.45	27
10/08/99	36	56.43.86	163.07.71	27
10/08/99	36	56.44.38	163.06.94	27
10/08/99	36	56.44.65	163.06.65	27
10/08/99	36	56.45.70	163.05.14	27
10/08/99	36	56.56.59	163.09.63	27
10/02/99	40	56.37.03	162.58.34	28
10/04/99	41	56.41.07	163.11.89	28
10/04/99	41	56.37.97	163.21.25	28
10/07/99	40	56.39.83	163.32.50	28
10/08/99	36	56.45.43	163.05.48	28
10/08/99	36	56.54.17	163.21.64	28
10/08/99	38	56.43.55	163.25.07	28
10/08/99	38	56.48.46	163.20.64	28
10/08/99	38	56.48.64	163.20.16	28
10/01/99	42	56.39.19	162.52.54	29
10/01/99	42	56.49.01	163.12.16	29
10/02/99	40	56.34.84	162.42.47	29
10/04/99	41	56.37.77	163.21.93	29
10/04/99	41	56.36.75	163.25.33	29
10/04/99	41	56.39.18	163.30.43	29
10/04/99	41	56.22.73	163.46.08	29
10/07/99	41	56.39.71	163.33.01	29
10/07/99	41	56.37.88	163.29.48	29
10/08/99	35	56.54.70	163.12.09	29
10/04/99	41	56.36.17	163.27.38	30
10/08/99	35	56.56.36	163.09.96	30
10/08/99	38	56.42.00	163.27.08	30
10/08/99	38	56.50.77	163.15.27	30
09/28/99	45	56.49.81	161.37.56	31
10/01/99	41	56.39.89	163.21.57	31
10/08/99	35	56.41.75	163.15.22	31
10/08/99	35	56.54.52	163.12.46	31
10/08/99	38	56.43.80	163.24.73	31
10/08/99	38	56.49.59	163.17.91	31
10/08/99	35	56.41.77	163.16.38	32
10/08/99	35	56.44.11	163.07.30	32

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Appendix B.5. (32 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
10/08/99	35	56.55.17	163.11.45	32
10/03/99	36	56.50.30	163.11.77	33
10/03/99	35	56.49.84	163.14.62	33
10/08/99	38	56.42.21	163.26.66	33
10/04/99	42	56.41.09	163.15.45	34
10/04/99	42	56.35.91	163.30.44	34
10/08/99	36	56.46.52	163.04.01	34
10/08/99	36	56.52.97	163.13.94	34
10/08/99	38	56.49.20	163.18.78	34
10/01/99	41	56.49.89	163.11.06	35
10/04/99	42	56.41.12	163.10.00	35
10/04/99	42	56.41.07	163.12.48	35
10/08/99	37	56.45.16	163.05.84	35
10/08/99	37	56.45.42	163.22.89	35
10/04/99	41	56.41.08	163.13.04	36
10/04/99	41	56.36.97	163.24.67	36
10/04/99	41	56.36.85	163.30.55	36
10/04/99	41	56.38.26	163.30.47	36
10/04/99	41	56.55.44	163.01.84	36
10/07/99	41	56.41.13	163.28.05	36
10/08/99	37	56.42.05	163.26.40	36
10/08/99	37	56.48.24	163.21.09	36
10/08/99	37	56.50.19	163.16.59	36
10/04/99	41	56.52.94	163.09.57	37
10/04/99	41	56.41.13	163.16.58	38
10/07/99	41	56.40.67	163.29.54	38
10/08/99	37	56.44.88	163.06.21	38
10/08/99	37	56.53.52	163.13.60	38
10/08/99	37	56.54.03	163.13.03	38
10/04/99	40	56.54.77	163.03.75	39
10/07/99	41	56.40.53	163.30.05	39
10/08/99	37	56.53.78	163.13.31	39
10/09/99	39	56.41.77	163.27.50	39
10/09/99	39	56.48.83	163.19.70	39
10/04/99	40	56.52.51	163.10.89	40
10/04/99	40	56.52.08	163.12.16	40
10/08/99	37	56.53.25	163.13.77	40
10/04/99	40	56.37.32	163.30.52	41
10/04/99	40	56.51.66	163.13.46	41
10/07/99	41	56.44.73	163.18.63	41
10/07/99	41	56.49.41	163.18.59	41
10/07/99	41	56.51.74	163.18.52	41
10/04/99	34	56.41.07	163.11.25	42
10/04/99	34	56.41.23	163.18.35	42
10/04/99	35	56.54.52	163.04.36	42

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Appendix B.5. (33 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
10/07/99	41	56.54.85	163.18.55	42
10/07/99	41	56.37.90	163.30.64	42
10/09/99	39	56.48.08	163.21.60	42
10/09/99	39	56.49.78	163.17.45	42
10/04/99	35	56.35.43	163.30.43	43
10/07/99	41	56.41.28	163.27.56	43
10/08/99	37	56.41.08	163.18.17	43
10/08/99	37	56.54.95	163.11.80	43
10/09/99	39	56.47.61	163.22.80	43
10/04/99	35	56.40.57	163.30.42	44
10/07/99	41	56.46.29	163.18.55	44
10/09/99	39	56.49.04	163.19.28	44
10/09/99	39	56.49.40	163.18.35	44
10/09/99	39	56.49.99	163.17.03	44
10/04/99	35	56.41.14	163.17.17	45
10/07/99	41	56.43.96	163.18.71	45
10/08/99	37	56.54.68	163.22.70	45
10/08/99	37	56.54.43	163.22.18	45
10/04/99	35	56.55.28	163.02.55	46
10/08/99	37	56.55.40	163.11.10	46
10/09/99	39	56.47.37	163.22.88	46
10/08/99	37	56.55.63	163.10.78	47
10/09/99	39	56.47.15	163.23.24	47
10/04/99	35	56.41.07	163.13.70	48
10/04/99	36	56.54.18	163.05.72	48
10/04/99	36	56.51.87	163.12.80	48
10/07/99	41	56.47.86	163.18.61	48
10/01/99	41	56.41.52	163.19.84	49
10/04/99	36	56.37.79	163.30.50	49
10/04/99	36	56.52.29	163.11.51	49
10/09/99	39	56.46.94	163.23.71	49
10/04/99	36	56.41.06	163.14.87	50
10/04/99	36	56.52.73	163.10.24	50
10/07/99	41	56.54.07	163.18.57	50
10/04/99	36	56.53.16	163.08.96	51
10/08/99	37	56.43.63	163.08.11	51
10/04/99	37	56.39.65	163.30.45	52
10/07/99	41	56.48.62	163.18.55	52
10/09/99	39	56.47.85	163.22.02	52
10/04/99	37	56.41.13	163.16.03	53
10/09/99	39	56.42.02	163.25.71	53
10/09/99	39	56.43.29	163.25.41	53
10/04/99	37	56.41.03	163.30.43	54
10/04/99	37	56.53.97	163.06.36	54
10/04/99	37	56.53.39	163.08.33	56

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Appendix B.5. (34 of 34).

Date Fished	Depth (fm)	Latitude	Longitude	Legal Crabs
10/04/99	44	56.41.52	163.30.42	57
10/07/99	41	56.53.30	163.18.55	58
10/04/99	44	56.38.72	163.30.43	59
10/04/99	44	56.54.38	163.05.03	59
10/04/99	44	56.53.56	163.07.67	59
10/07/99	41	56.47.09	163.18.45	61
10/07/99	41	56.45.51	163.18.59	62
10/07/99	41	56.50.96	163.18.58	64
10/04/99	44	56.53.79	163.07.05	65
10/09/99	39	56.42.77	163.26.07	65
10/07/99	41	56.50.18	163.18.59	68

^a Includes only pots with 20 or more crabs.

Appendix B.6. Tag study random pot category assignments.

String No.	Station No.	Pot Type		
1	1	1	2	3
1	2	2	3	1
1	3	3	1	2
1	4	3	2	1
1	5	3	2	1
1	6	3	2	1
1	7	1	3	2
1	8	3	2	1
1	9	3	2	1
1	10	3	2	1
2	11	3	1	2
2	12	1	3	2
2	13	3	1	2
2	14	1	3	2
2	15	2	3	1
2	16	2	1	3
2	17	2	1	3
2	18	2	3	1
2	19	1	3	2
2	20	1	3	2
3	21	1	2	3
3	22	1	2	3
3	23	2	3	1
3	24	1	3	2
3	25	1	3	2
3	26	1	2	3
3	27	1	3	2
3	28	2	1	3
3	29	1	3	2
3	30	1	3	2
4	31	2	3	1
4	32	2	3	1
4	33	1	3	2
4	34	2	1	3
4	35	3	1	2
4	36	3	1	2
4	37	1	3	2
4	38	3	2	1
4	39	3	1	2
4	40	1	2	3

-Continued-

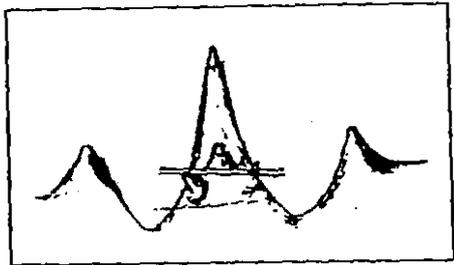
Appendix B.6. (page 2 of 3).

String No.	Station No.	Pot Type		
5	41	3	1	2
5	42	2	3	1
5	43	1	2	3
5	44	3	1	2
5	45	1	3	2
5	46	3	2	1
5	47	2	1	3
5	48	2	3	1
5	49	3	1	2
5	50	3	1	2
6	51	2	3	1
6	52	3	2	1
6	53	3	1	2
6	54	3	1	2
6	55	2	3	1
6	56	1	3	2
6	57	3	1	2
6	58	2	1	3
6	59	2	3	1
6	60	2	1	3
7	61	2	2	1
7	62	2	3	3
7	63	3	3	1
7	64	1	2	3
7	65	2	3	2
7	66	2	2	2
7	67	2	2	2
7	68	2	1	1
7	69	1	2	2
7	70	2	2	3
8	71	1	1	2
8	72	3	2	2
8	73	2	2	1
8	74	1	3	2
8	75	2	3	1
8	76	1	2	2
8	77	2	2	3
8	78	1	2	1
8	79	1	2	2
8	80	2	1	2

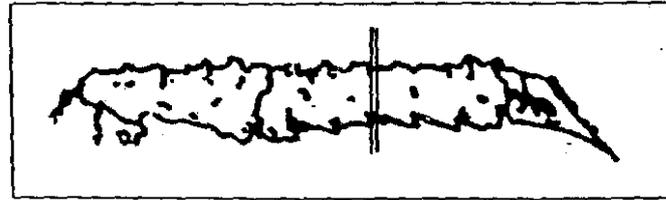
-Continued-

Appendix B.6. (page 3 of 3).

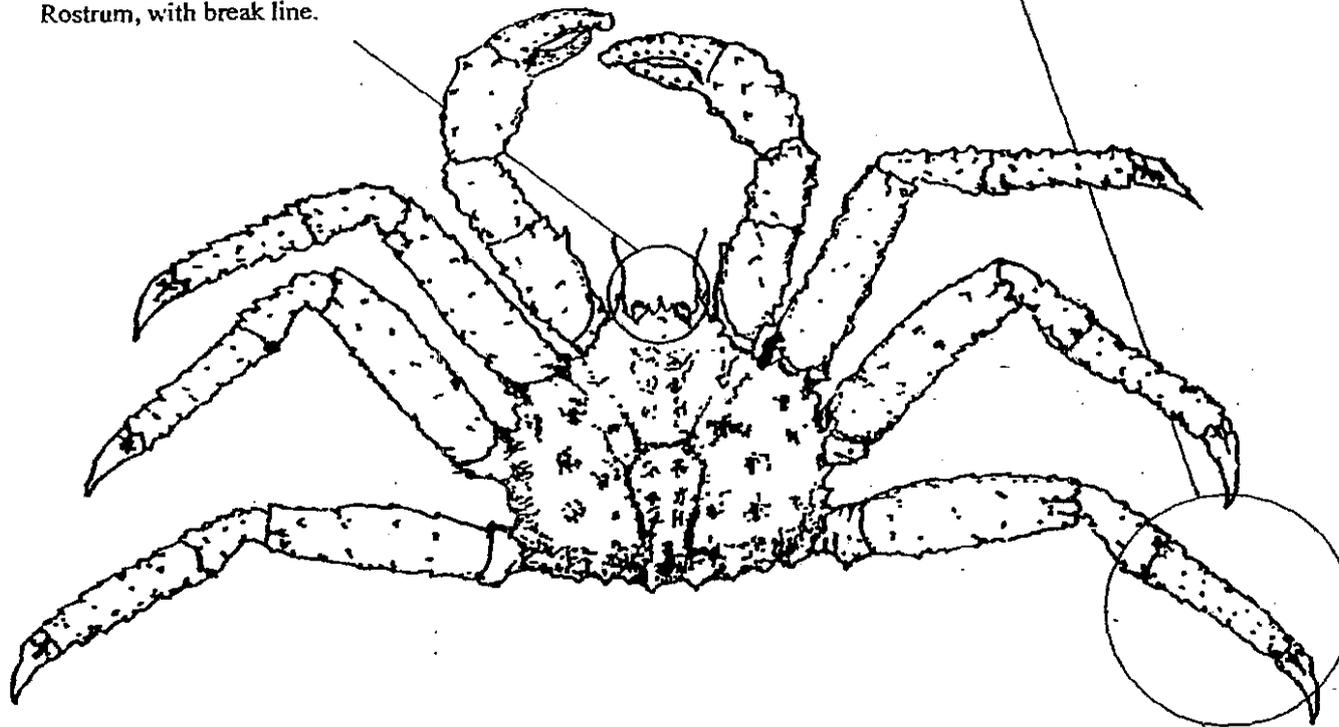
String No.	Station No.	Pot Type		
9	81	2	2	3
9	82	2	2	1
9	83	2	2	2
9	84	3	2	1
9	85	3	2	2
9	86	1	2	1
9	87	2	3	3
9	88	1	3	3
9	89	3	2	2
9	90	3	3	3
10	91	2	3	3
10	92	1	1	2
10	93	3	3	2
10	94	1	3	1
10	95	1	1	2
10	96	2	2	2
10	97	2	3	2
10	98	2	1	1
10	99	2	2	2
10	100	2	2	1
11	101	2	3	2
11	102	3	1	2
11	103	1	2	3
11	104	3	3	3
11	105	2	1	2
11	106	3	2	2
11	107	3	1	1
11	108	2	1	2
11	109	3	1	1
11	110	1	3	2
12	111	3	2	2
12	112	3	2	2
12	113	3	2	3
12	114	1	1	2
12	115	3	1	3
12	116	2	3	3
12	117	3	2	2
12	118	2	2	2
12	119	3	2	1
12	120	1	2	2



Rostrum, with break line.



Leg merus (propodus), with crush line.



Appendix B.7. Illustration of handling injury site placement.

Appendix B.8. Equipment list.

Personal Gear:

- survival suits with EPIRBs & strobe attached (4)
- rain gear, boots and gloves (4 pr liners, 5 pr rubber gloves) per person
- earplugs (12 pr)-3 per person
- Stormy Seas jackets (4) *2 will be brought from Kodiak
- EMT 1 medical jump kit (Dutch Harbor)

Books and charts:

- Kessler-Alaska's Saltwater Fishes
- shipboard instruction manuals (6 copies)
- 1999-2000 ADF&G Commercial Shellfish Fishing Regulations

Office Supplies:

- rite-in-rain notebooks (2)
- pencils no. 2 (1 doz.) &/or mechanical pencils plus extra lead (1/2 doz.)
- permanent black markers (1)
- 10"X13" manila envelopes for data (10)
- calculator w/ extra batteries
- duct tape (1 lg roll)
- pencil sharpener
- legal pads (2)

Sampling Equipment/Supplies:

- clipboards(4)
- covered clipboards (2)
- 12" vernier calipers (4 pr. from Kodiak)
- 6.5" measuring sticks (4)
- 5.5" measuring sticks (4)
- ratchet and socket set plus 1/2"X 3" lag bolts (1 doz.)
- WD40 (2 cans)
- adjustable leg aluminum measuring tables (2)
- 4'X8' aluminum sampling table
- tube of silicon (1)
- galvanized wood screws (1lb. total of 2 & 3")
- lumber : (1) -2" x 6" x 8'; (2) -2' x 4" x 8'; 1 sheet 5/8" plywood
- 4'X8'marlite or formica (1/2 sheet)
- formica bonding adhesive (1 spray can)
- skid fish totes (2)
- orange and black sample baskets (12-15)
- ziplock freezer bags (1 box quart-sized; 1 box gallon-sized)
- 18" zip ties (50-100)

-Continued-

Tagging Equipment:

- 3,000 qty. series 'A' Floy tags
- 1/4" dia. X 46" stainless steel rods (used as tag racks) (12)
- wire for tagging needles (1 roll - 18 gauge) +200-250 pre-cut tag needles
- wire cutters
- needle nose pliers(2)
- 1-1/2" side cutter pliers (2)
- 2-1/2" channel lock (2)
- file
- small wooden platform w/ styrofoam/polyurethane cushion for needles (2)
- polyurethane/styrofoam

Electronics:

- Micron Millennia laptop computer + mouse pointer (Kodiak)
 - surge protector (1)
 - 25' extension cord (2)
 - Minolta video camera (Kodiak)
 - Minolta 35mm SLR + 4 rolls 100-400 ASA film (Kodiak)
 - clip-on 110-volt lights for deck lighting (2)
 - underwater video camera system:
 - a. aluminum housing containing controller and video recorder
 - b. camera (1 B&W; 1 color) + power cable (1)
 - c. rite-lites (3) + spare 50W and 100W bulbs + power cable (2)
 - d. 24 volt Deep-Sea batteries (2) + power supply cable (2 - 10' and 40')
 - e. deployment frame + mounting brackets for camera and rite-lites
 - f. 1 1/2" stainless steel bolts, washers and wing nuts (20 each)
 - g. silicone electrical insulating compound (1 tube)
 - h. spare O-ring for controller / video housing (1)
 - i. spare fuses (6)
 - i. 24 volt battery charger (1)
 - j. 110-volt vacuum/pump (1)
 - k. 3 kilogram digital platform scale
 - l. 8mm video tapes (4)
-

Appendix B.9. Procedures for Selecting Sample Pots.

Once established, the pot selection sequence for each day of catch sampling should not be altered. The method employed to select sample pots can include the use of a random numbers program available on some calculators and most computers. Following is an example of how to select sample pots while employing either of these methods:

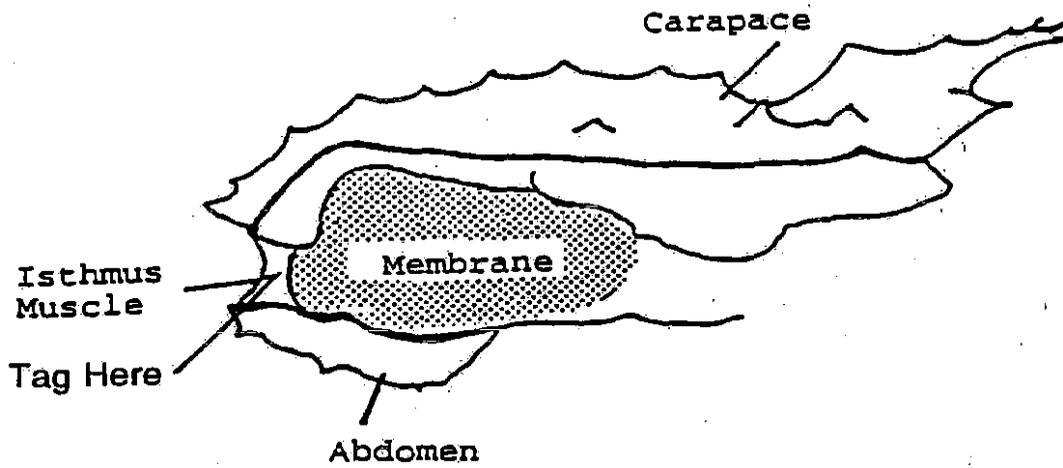
The captain says that he will pull 100 pots for the day. A total of 20 of these need to be randomly selected for catch sampling. In order to select the sample pots from a table of random digits, a multiplication factor must be chosen for identifying the numbers selected. In this case, multiples of 10 will be used; referring to the table, start with the 7th number in the first column and then, counting by multiples of 10, pick the first 20 numbers between 1 and 100, discarding any duplicate numbers selected. If a random numbers program is instead used to select the sample pots, the multiplication factor need not be employed and the first 20 non-duplicate numbers between 1 and 100 generated by the program would be used to establish the sequence of sampled pots.

In order to use either the table of digits or a random number program for selecting sample pots, the total number of pots to be pulled for the day must be known in advance. When using the random numbers table a different random selection scheme must be employed each day. Start with the nth number in the nth column (or row) and count by the chosen multiplication factor (different for each day). If the vessel crew intends to pull less than 100 pots in a given day, use the first two or the middle two or the last two numbers of the nth number (instead of all three digits) to select the sample pot numbers.

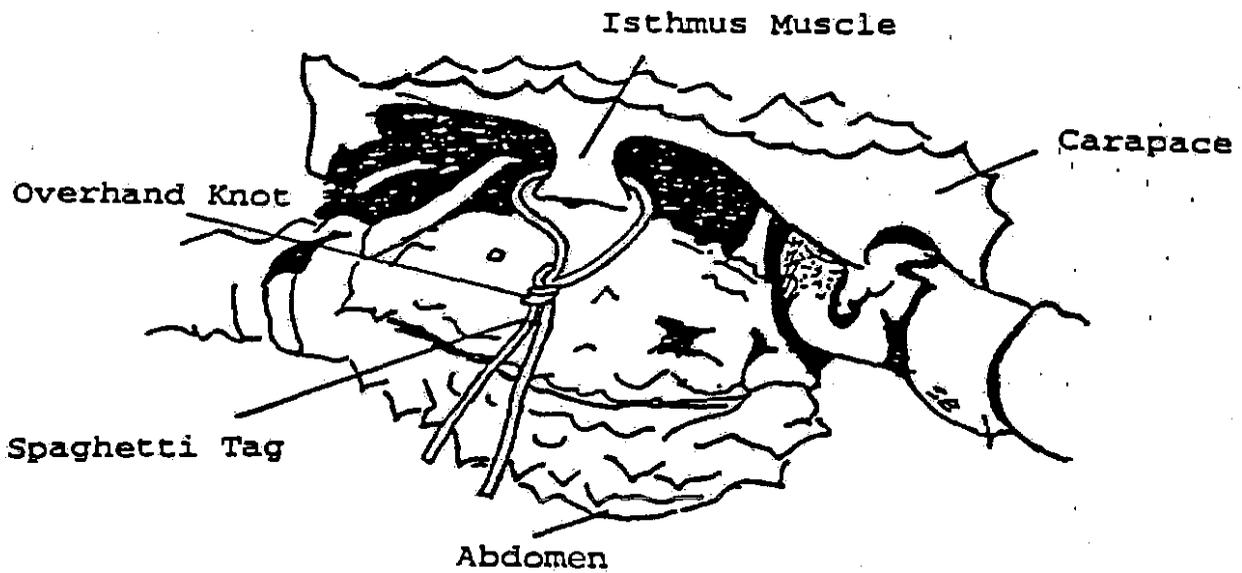
Appendix B.10. Floy Tagging Procedures.

After being measured and shell-aged (and if female, also assessed for reproductive condition), crabs selected for tagging can be immobilized by securely holding the posterior portion of the body and gently pressing the anterior portion against the foam "tagging pad". This technique will effectively pin the chelipeds between the body and tagging pad, and thus prevent the sampler from being pinched. While holding the crab in this position the isthmus muscle is exposed by prying the posterior carapace margin away from the tergum. A 'U'-shaped wire needle made of 18-gauge galvanized metal and threaded onto one end of the tag is used to pierce the isthmus and draw the tag through. After equal lengths of the tag lay on either side of the isthmus, the needle is removed and the threaded tag end is inserted into the metal locking sleeve and drawn through until again flush with the other end. The locking sleeve is then forcefully crimped using a side cutter pliers or 2 ½" channel lock.

If the locking sleeves do not adequately secure the loose tag ends, an overhand knot can also be used. The knot should be tied as close to the isthmus muscle as possible while remaining visible outside the posterior carapace margin. Prior to pulling the knot tight, the two sides of the tag next to the carapace must be held in order to prevent the tag from tearing through the isthmus muscle. If a tag is torn through the isthmus muscle (either when threading the tag through or tightening the overhand knot), the crab must not be tagged again. On these occasions a note must be made in the 'Comments' section of the crab survey data form indicating the crab was damaged during tagging and the tag number not used.



Side view (cutaway)



Rear View

Illustration of Floy tag placement.

Appendix B.11. Instructions for Handling and Operating the Autonomous Underwater Video Recorder System.

At all times during programming of MSC-1000 controller the spherical anodized aluminum housing containing this component and the system VCR must be kept in a sheltered and dry area. **Under no circumstances should the housing be opened on the outside deck of the vessel - regardless of weather and sea conditions.** Since the system 24-volt battery must be re-charged (or replaced) following every deployment, the controller can most easily be accessed for programming by adherence to the following sequence of actions:

- Place the pot selected for observation in the vessel's launcher.
- Secure the fully charged battery in the deployment frame.
- Secure the frame in the selected pot.
- Using the 40' auxiliary power cable and following Step # 1 below, connect the battery to the appropriate port (look for the matching pin pattern) on the housing bulkhead.*

*Note: The power cables leading to the housing must be threaded through the open ends of orange "pumpkin" halves prior to being connected to the housing ports.

The housing can now be transported up to 40' to a sheltered location where it can be opened and the controller programmed. Prior to opening the housing following each deployment (and before disconnecting any of the power cables), the entire unit must be thoroughly rinsed with FRESH WATER and then dried off. Opening and closing the housing is accomplished by using the 110-volt air pump/vacuum. To open the housing place it in the opening of one of the provided 5-gallon buckets, with the end bulkhead containing the hexagonal stainless steel pressure valve screw facing upward. Remove the hexagonal valve screw and attach the plastic hose connected to the pump/vacuum unit where the outward-pointing arrow is located (the arrow should be pointing toward the end of the hose being attached to the housing). Plug in the pump/vacuum unit and wait 5 to 15 seconds for the pressure resulting from air being forced into the housing breaks the seal between the two halves. **(NOTE: The upper half of the housing must be held firmly in place during this process.)** To access the controller program display, gently lift the upper half of the housing away from the lower half and place it in the second 5-gallon bucket, while taking great care not to stretch, twist or tangle any of the internal wires connecting the system components. Programming the video system controller can be successfully completed by adhering to the following procedures:

1. If the battery has been disconnected, make sure the system power switch (the only toggle switch) is in the 'off' position before the battery is re-connected.
2. Make sure VCR power switch is in the 'off' position.
3. Turn system power switch to the 'on' position.
4. The LCD screen on the controller will now display the 'Standby' menu, which should read as follows:

-Continued-

RUN STORED PROGRAM
PROGRAM EVENTS

CALIBRATION

Sel Next Prev Back

a. Press 'Next' until 'PROGRAM EVENTS' is highlighted.

b. Press 'Sel'.

The 'PROGRAM EVENTS' menu should now display the following:

EVENT: 001
DATE: 07 01 01*
TIME: 00:00:00
H M S
SEL NEXT PREV SAVE

*Note: The date will be displayed in the relative time mode, reflecting the date of January 1, 1970. Although the controller can be programmed in either a real or relative time mode, real mode programming is unnecessary since video time/date-stamping is not possible without upgrading the MSC-1000. Programming in the real time mode requires that the correct the date/time are calibrated beforehand. Consult the complete MSC-1000 User's Manual for calibration procedures.

c. Press 'Next' until 'TIME' is highlighted

d. Press 'Sel' to advance you to the 'Set Time' menu, which should display the following:

DATE TIME
YYMMDD HH:MM:SS

DIG. INC. DEC. BACK

e. In order to enter the desired elapsed time between recording events, Press the 'DIG.' key to advance between hours, minutes and seconds, and the 'INC.' and 'DEC.' keys to add or subtract units.

IMPORTANT: The internal clock in the controller will begin running whenever system power switch is placed in the 'on' position. Accordingly, the time designated for each recording interval is directly related to the time the internal clock is activated. For example, a recording interval set for 12 hours into the event program sequence will occur 12 hours after the system power switch is turned on – not 12 hours following completion of programming.

-Continued-

f. Press 'SAVE'.

g. Press 'NEXT' and advance to the 'Event' menu, which should display the following options:

```
RECORD:   AAA
CAMERA:   AAA
LIGHT 1:  AAA
SEL      NEXT  PREV  BACK
```

h. Using the 'NEXT' and 'PREV' keys, toggle through between functions to activate the camera and lights. Press 'SEL' when the desired function is highlighted (this will designate each system component to come 'ON' or 'OFF' at the time of the programmed event). In order to change the setting for the second camera light ('LIGHT 2'), press 'NEXT' to scroll down the 'Event' menu. Press 'Sel' to activate or de-activate the second light.

i. Press 'BACK' to return the 'PROGRAM EVENT' menu.

j. Press 'SAVE', to return to the 'Standby' menu ('EVENT 2' should now appear at the top of the LCD screen).

IMPORTANT: Repeat Step 4, parts a through j, for each programmed event (i.e., each occasion the video system is programmed to be turned on, or to be turned off). For example, if the recorder and camera (and if applicable, lights '1' and '2') will take video footage on two separate occasions during a given time interval, a total of 4 events will need to be programmed - 1 for each time the system is turned on (a total of 2 times in this example), and 1 for each time the system is shut off.

5. After designating the desired number of events (check the 'EVENT' display if necessary) the program sequence must be initiated by returning to the 'Standby' menu, which should again display the following:

```
RUN STORED PROGRAM
PROGRAM EVENTS
CALIBRATION
```

```
Sel Next Prev Back
```

- a. Select the 'RUN STORED PROGRAM' option.
- b. Press 'RUN' to start the sequence of programmed events.

The system is now ready to be closed, sealed and deployed.

Instructions for Dockside Samplers

Introduction

ADF&G has recently completed a tagging study on Bristol Bay red king crabs focused on effects of handling injuries most commonly observed in the commercial fishery. Approximately 3,000 legal male red king crabs were tagged during the Bristol Bay test fishery between September 20 and October 12 conducted by the F/V *Shaman*. Dockside samplers are a vital component of a successful effort to retrieve tagged crabs and tag recovery information through vessel captain and crew interviews. Recovery information from tagged crabs is necessary for analysis and interpretation of the tag study results, the objective of which includes estimating mortality resulting from injuries.

Tag Description

The 2000 Floy tags are made of 14-inch fluorescent yellow tubing threaded through a fluorescent orange tab. Tags are attached to each crab at the isthmus muscle (between the posterior carapace and abdomen). The yellow tubing is imprinted with a 5-digit tag number. The orange tab has the inscription "LEAVE TAG ON CRAB - NOTIFY ADFG" on one side, and the tag number inscribed on the reverse side.

General Instructions

A news release has been issued to Bristol Bay fishermen requesting their help in the recovery of tagged crabs. During catch sampling or the confidential interview, ask the captain and crew of each vessel whether tags or tagged crabs are aboard, and if they have recapture information for retained tagged crabs or any caught and re-released at sea. Please collect this information during your interview and sample all tagged crabs for size, sex and shell age. If you are given a tag with no other recovery information, note that fact on the recovery form and record the fate of the crab as dead. Let the offloading crew for the processor know that tagged crabs may be aboard, while keeping an eye out for them as the offloaders throw crabs into the brailers. Also, inform the foreman that there may be tagged crabs in deliveries and ask workers on the crab processing line for any tags or tagged crabs they may have recovered.

After sampling has been completed, tagged crabs should be handled as follows:

Legal male red king crabs will be returned to the processing line after all required data is recorded and the tag is removed.

Sublegal male and female red king crabs will be fully sampled, the tag removed, and the crab placed in the vessel's deadloss pile. Do not leave tags on live sublegal males or females and do not discard them over the side of the vessel.

All tag recoveries will be fully documented on the two-page form (Appendix B.4, Form 3). All tags and tag recovery forms, including those collected from vessel captains, should be returned to Holly Moore at the end of each workday.

-Continued-

Tag Reward Program

Tags and tagged crabs may come from the vessel crews, captains, or processing workers whereas recovery information may only come from the captain or his relief skipper. Tag reward patches will be given to individuals who present either a tagged crab or a tag to the dockside sampler or ADF&G staff and a single tag reward clipboard will be given to the captain of each vessel crew that returns tags. Tag rewards may be issued at the time of sampling, or if unavailable, given or mailed to the tag finder at a later date. Dockside samplers will be issued tag reward patches to enhance the visibility of the tagging program, but are not eligible for tag rewards. Be sure to credit tag returns appropriately.

Instructions for Shellfish Observers

Introduction

ADF&G has recently completed a tagging study on Bristol Bay red king crabs focused on effects of handling injuries most commonly observed in the commercial fishery. Approximately 3,000 legal male red king crabs were tagged during the Bristol Bay test fishery between September 20 and October 12 conducted by the F/V *Shaman*. At-sea observers are a vital component of a successful effort to retrieve tagged crabs, especially because of their unique opportunity to monitor pot catches for tagged crabs, and to sample crabs at sea where sublegal males and females can be re-released without harm near their initial capture location. Recovery information from tagged crabs is necessary for analysis and interpretation of the tag study results, the objective of which includes estimating mortality resulting from injuries.

Tag Description

The 2000 Floy tags are made of 14-inch fluorescent yellow tubing threaded through a fluorescent orange tab. Tags are attached to each crab at the isthmus muscle (between the posterior carapace and abdomen). The yellow tubing is imprinted with a 5-digit tag number. The orange tab has the inscription "LEAVE TAG ON CRAB - NOTIFY ADFG" on one side, and the tag number inscribed on the reverse side.

General Instructions

A news release has been issued to Bristol Bay red king crab fishermen requesting their help in the recovery of tagged crabs. Observers assigned to floating processors should ask for recovered tags (and completed tag recovery forms) from captains and crews of all vessels delivering catches. Observers assigned to catcher-processors should inform the captain, crew, and processing workers to be on the lookout for tagged crabs, and to set them aside and immediately contact the observer so that (s)he may sample the crab(s). Stress to the captain, crew, and processing personnel that the crabs should not be damaged or processed, and that the tags should be left on the crabs until the observer samples them. Also, inform crews that tagged sublegal male or female crabs encountered must be re-released following sampling with tags intact. If you are given a tag with no other recovery information, note that fact on the recovery form and record the fate of the crab as dead.

After tagged crab sampling has been completed, crabs will be returned as follows:

Legal male red king crabs will be returned to the processing line after all required data is recorded and the tag has been removed.

Sublegal male and female red king crabs will be sampled as soon as possible and, *with the tag intact*, returned to the sea as gently as possible. If the tag is pulled out, the crab will bleed to death; if the tag is cut off, the possibility of multiple recaptures of that animal have obviously been eliminated.

-Continued-

All tagged crab recoveries should be fully documented as shown on the attached two-page form. All tags and tag recovery forms, including those collected from vessel captains' should be returned to ADF&G in Dutch Harbor at the time of your debriefing.

Tag Reward Program

Tags and tagged crabs may come from the observer, vessel crews, captains, or processing workers whereas recovery information may only come from the observer or the captain or his relief skipper. Tag reward patches will be given to individuals who present either a tagged crab

or a tag to the observer and a single tag reward clipboard will be given to the captain of each vessel crew that returns tags. Tag rewards will be issued by observers and provided to them during briefings. If unavailable at the time tags are returned rewards will be given directly or mailed to the tag finder at a later date. Observers will be issued tag reward patches to enhance the visibility of the tagging program, but are not eligible for tag rewards. Be sure to credit tag returns appropriately.

**Instructions for Completing the ADF&G Westward Region
Tagged Crab Recovery Form**

SIDE 1: Tag Recovery Information

SPECIES: Red king crab (species code = 921).

FISHERY CODE: TR00 (Bristol Bay Area T Red King Crab).

OBSERVER/DOCKSIDE SAMPLER: Your name.

SEQUENTIAL POT NUMBER: For observer use only. Record the sequential pot number when tagged crabs are recovered from pots selected for **Bycatch sampling** (Do not record sequential pot numbers for tagged crabs recovered during any other type of sampling). If tagged crabs are found within the 600-crab Legal tally, note this fact in the 'Comments' section on Side 2 of this form.

FLOY TAG SERIES & NUMBER: See tag description above. Year 2000 tags are fluorescent yellow with a fluorescent orange tab, and are imprinted with a 5-digit number; tagged crabs from previous Bristol Bay tagging surveys may also be captured.

SIZE: Record the carapace length in millimeters (mm). Measure the crab twice before recording, as any growth information is extremely important, and 1-2 mm variation in measurement due to sampling error is relatively common.

LEGAL: Identify measured male crabs as either 1=sublegal, or 2=legal. Legal crabs are 6.5" (165.1 mm) or greater in carapace width outside the spines.

SEX: Male=1, Female=2.

SHELL: Soft=0; 9=New Pliable; New=1; Old=2; Very Old=3.

FATE: 1=Retained for sale; 2=Released alive; 3=Dead (not retained for sale; e.g., found in the deadloss pile or frozen for ADF&G/Observer sampling, etc.).

CAPTURE DATE: Use month-day-year format.

CAPTURE LOCATION: Latitude and longitude coordinates from the captain, in degrees and minutes, with minutes to the hundredths (convert seconds to hundredths of minutes). If lat./long. information is not available, write "N/A" across the lat./long. data columns.

DEPTH: In fathoms.

STATISTICAL AREA: Determine from statistical area charts unless identified as capture location by captain in absence of lat./long. coordinates.

ADF&G VESSEL NUMBER: The ADF&G number of the vessel that landed the tagged crab.

RECEIVED TAG OR TAGGED CRAB FROM: Record full name, address and phone number of the individual who gave you the tag or tagged crab. Check the "Needs reward" box. When the reward has been given to the tag finder, check the "issued" box.

RECEIVED RECOVERY LOCATION DATA FROM: Record full name, address and phone number.

VESSEL NAME: The vessel that landed the tagged crab.

PROCESSOR NAME: The processor the tagged crab was delivered to.

SAMPLING DATE: Date the tag or tagged crab was received and/or sampled.

SIDE 2: Female Reproductive Data and Comments Section

Use this side of the tag recovery form to record female reproductive data and general comments on tagged crabs. Refer to codes on the bottom of the form for appropriate assignment of embryo color and development, clutch condition and percent clutch fullness, disease/parasites, etc. Record males with shell rust, *B. callosus*, or 'leatherback' condition in the 'Other' column. If male crabs have more than one 'Other' code, record the additional codes in the 'Comments' section. **For shellfish observers only:** Record sequential pot number. Remember that codes used for clutch condition, percent clutch and 'Other' categories are different than those used on the Crab and Fish Measurement form. If tagged crabs are found within the 600-crab Legal tally, note this fact in the 'Comments' section.



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