

Lesson 7

SEARCH PATTERNS

Overview

Introduction

Search pattern selection depends on many factors, including accuracy of datum, search area size, number and capabilities of SRUs, environmental conditions, size of search target, and type of survivor detection aids. While the factors are interrelated, some may be more important than others.

This lesson will teach you how to select and plot a search pattern. It will also provide a technique for plotting patterns on a chart. There are numerous ways to successfully plot a search pattern; this course will show you one.

Objectives

After completing this lesson, you should be able to:

- **DEMONSTRATE** the understanding of CSP; Search Leg; Cross Leg; Creep; Major Axis; Minor Axis.
 - **IDENTIFY** the purpose of each search pattern.
 - **SELECT** the appropriate search pattern.
 - **APPLY** the standard search pattern designations
 - **FORWARD** a search pattern to a SRU utilizing the Corner Point Method or the Center Point Method.
-

Instruments Required

To successfully complete this lesson, you will need:

1. Plotting tools (Weems and dividers)
 2. Chart #13218
-

Reference

The information in this lesson can be found in the following reference:

1. Coast Guard Addendum, Sections 3.2.5 – 3.2.6, 3.4.2.1 - 3.4.2.8, H.4.3 – H.4.3.6, H.6.2.3, H.6.3.1, H.6.3.2, H.7.1, H.7.1.1, H.7.2, H.7.3 – H.7.3.6, H.7.3.9(c), H.7.4 (Table H-44)
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Search Patterns Lab

This lab will provide you with an opportunity to practice plotting search patterns. It will also provide practice with answering speed, time, and distance questions.

Read the information carefully and plot the given search pattern. Concentrate on precision. Answer the questions and check your answers against the answers at the end of this section. Have an instructor review your work when your team has completed this lab. **Note to Student:** The first five search patterns are just basic search patterns to be plotted. No questions are asked and no graphics are provided at the end of this section. For the remaining search patterns answers and graphics are provided.

Using the search pattern summary information, plot the patterns.

```
PARALLEL SEARCH #1
NAME           : P/C MAGIC BUS
CENTER         : 41-20.0N 071-20.0W
LENGTH        : 8.00 NM
WIDTH         : 6.00 NM
MAJOR AXIS    : 000 T
MINOR AXIS    : 090 T
CREEP DIRECTION : 090 T
TRACK SPACING : 2.00 NM
FIRST TURN    : RIGHT
CSP           : 41-17.0N 071-22.7W
CORNER PT #1  : 41-24.0N 071-24.0W
CORNER PT #2  : 41-24.0N 071-16.0W
CORNER PT #3  : 41-16.0N 071-16.0W
CORNER PT #4  : 41-16.0N 071-24.0W
```

SORTIE SUMMARY

ON SCENE DISTANCE : 22.03 NM

ADDITIONAL INFO

```
CENTER         : 41-20.0N 071-20.0W
LENGTH        : 8.00 NM
```

Search Patterns Lab

P/C I'M LOST

CREEPING LINE SEARCH #1

NAME : P/C I'M Lost
CENTER : 41-20.0N 071-10.0W
LENGTH : 8.00 NM
WIDTH : 6.00 NM
MAJOR AXIS : 000 T
MINOR AXIS : 270 T
CREEP DIRECTION : 000 T
TRACK SPACING : 2.00 NM
FIRST TURN : RIGHT
CSP : 41-17.0N 071-07.3W
CORNER PT #1 : 41-24.0N 071-14.0W
CORNER PT #2 : 41-24.0N 071-06.0W
CORNER PT #3 : 41-16.0N 071-06.0W
CORNER PT #4 : 41-16.0N 071-14.0W

SORTIE SUMMARY

ON SCENE DISTANCE : 22.06 NM

ADDITIONAL INFO

AREA COVERED : 48.00 SQNM
CENTER : 41-20.0N 071-10.0W
LENGTH : 8.00 NM
WIDTH : 6.00 NM
ORIENTATION : 000°

F/V TRAINER

EXPANDING SQUARE SEARCH #1

NAME : F/V TRAINER
CENTER : 41-20.0N 071-20.0W
RADIUS : 3.60 NM
ORIENTATION : 000 T
TRACK SPACING : 2.40 NM
FIRST TURN : RIGHT
CSP : 41-20.0N 071-20.0W
CORNER PT #1 : 41-23.6N 071-24.8W
CORNER PT #2 : 41-23.6N 071-15.2W
CORNER PT #3 : 41-16.4N 071-15.2W
CORNER PT #4 : 41-16.4N 071-24.8W

SORTIE SUMMARY

ON SCENE DISTANCE : 19.24 NM

ADDITIONAL INFO

AREA COVERED : 51.84 SQNM
CENTER : 41-20.0N 071-20.0W
LENGTH : 7.20 NM
WIDTH : 7.20 NM

Search Patterns Lab

F/V TOM BOY

SECTOR SEARCH #1

NAME : F/V TOM BOY
CENTER : 41-25.0N 071-10.0W
RADIUS : 1.00 NM
ORIENTATION : 300 T
SECTORS : 6
FIRST TURN : RIGHT
CSP : 41-25.0N 071-10.0W

SORTIE SUMMARY

ON SCENE DISTANCE : 9.02 NM

R/V TRACKLINE

TRACK LINE SEARCH #1

NAME : R/V TRACKLINE
PASSES : 2
TRACK SPACING: 2.00 NM
FIRST TURN : RIGHT
CSP : 41-12.9N 071-10.6W
WAYPOINTS :
1: 41-12.0N 071-10.0W
2: 41-15.9N 071-00.0W
3: 41-12.2N 070-50.0W

SORTIE SUMMARY

ON SCENE DISTANCE : 37.80 NM

Search Patterns Lab

F/V TUNA DELIGHT

Using the following search pattern summary, plot the pattern. Your AUXFAC will arrive on scene at 1815 local.

PARALLEL SEARCH #2

NAME : FV TUNA DELIGHT
CENTER : 41-16.7N 071-27.5W
SEARCH AREA LENGTH : 10.20 NM
SEARCH AREA WIDTH : 6.00 NM
MAJOR AXIS : 150 T / 165 M
MINOR AXIS : 240 T / 255 M
CORNER PT #1 : 41-13.8N 071-20.6W
CORNER PT #2 : 41-10.8N 071-27.6W
CORNER PT #3 : 41-19.6N 071-34.4W
CORNER PT #4 : 41-22.6N 071-27.4W
CSP : 41-21.8N 071-27.7W
LEG DIRECTION : 150 T / 165 M
LEG LENGTH : 9.00 NM
FIRST TURN : RIGHT
CREEP DIRECTION : 240 T / 255 M
TRACK SPACING : 1.20 NM

1. Using a search speed of 12 knots, how long will it take to complete the search? (Distance = Time x Speed)

_____ Hours and _____ minutes

2. Sunset is at 2030 local. How many trackline miles will be completed by this time?

_____ Trackline miles

Search Patterns Lab

F/V AMANDA KAY

Use the following search pattern summary to plot your pattern.

TRACK LINE SEARCH #2

NAME : AMANDA KAY
PASSES (LEGS): 2
TRACK SPACING: 2.00 NM
FIRST TURN : LEFT
CSP : 41-09.1N 071-13.4W
WAYPOINTS :
1: 41-10.0N 071-12.9W
2: 41-06.4N 071-01.0W
3: 41-12.0N 070-50.0W

1. What is total distance of the trackline pattern?

_____ Trackline miles

2. If a helicopter flew the search at 90 knots, how long will it take to complete the search?

_____ minute(s)

3. What is the direction of the cross leg?

_____ T

F/V NAVIGATOR

Use the following search pattern summary to plot your pattern.

EXPANDING SQUARE SEARCH #2

NAME : FV NAVIGATOR
CENTER : 41-33.9N 070-44.3W
RADIUS : 2.00 NM
ORIENTATION : 070 T / 085 M
CORNER PT #1 : 41-36.5N 070-42.7W
CORNER PT #2 : 41-32.7N 070-40.9W
CORNER PT #3 : 41-31.3N 070-45.9W
CORNER PT #4 : 41-35.1N 070-47.7W
CSP : 41-33.9N 070-44.3W
FIRST TURN : RIGHT
TRACK SPACING : 0.80 NM

Search Patterns Lab

F/V NAVIGATOR What is the heading of the fifth leg?
(continued)

_____ T

You will arrive in the search area at 1915 local. Sunset is at 2030 local. At a speed of 12 Knots, can you complete the pattern by sunset? If not, at what speed can you complete the pattern by sunset?

YES / NO (circle one) _____ Knots

P/C WATER HAMMOCK

Use the following search pattern summary to plot your pattern.

CREEPING LINE SEARCH #2

NAME : PC WATER HAMMOCK
CENTER : 41-13.5N 070-41.8W
SEARCH AREA LENGTH : 9.00 NM
SEARCH AREA WIDTH : 4.25 NM
MAJOR AXIS : 010 T / 025 M
MINOR AXIS : 280 T / 295 M
CORNER PT #1 : 41-18.3N 070-43.5W
CORNER PT #2 : 41-17.6N 070-38.0W
CORNER PT #3 : 41-08.7N 070-40.1W
CORNER PT #4 : 41-09.4N 070-45.6W
CSP : 41-09.7N 070-41.0W
LEG DIRECTION : 280 T / 295 M
LEG LENGTH : 2.45 NM
FIRST TURN : RIGHT
CREEP DIRECTION : 010 T / 025 M
TRACK SPACING : 1.80 NM

1. Using a search speed of 10 knots, how long will it take to complete the search?

_____ Hours and _____ minutes

Search Patterns Lab

S/V CONTRAIL Use the following search pattern summary to plot your pattern.

```
SECTOR SEARCH #2
-----
NAME           : SV CONTRAIL
CENTER         : 41-15.1N 071-16.2W
RADIUS         : 3.00 NM
ORIENTATION    : 080 T / 095 M
SECTORS        : 6
CSP            : 41-15.1N 071-16.2W
FIRST TURN     : RIGHT
```

1. Using a search speed of 90 knots, how long will it take to complete the search?

_____ Hours _____ Minutes

F/V ZEPPLIN Parallel Search

The information for the F/V ZEPPLIN search will be used for the next two patterns. The F/V ZEPPLIN is a 54' fishing vessel.

Use the following search pattern summary to plot your pattern.

```
PARALLEL SEARCH #3
-----
NAME           : F/V ZEPPLIN
CENTER         : 41-12.2N 071-12.7W
LENGTH        : 9.00 NM
WIDTH         : 6.00 NM
MAJOR AXIS    : 270 T
MINOR AXIS    : 000 T
CREEP DIRECTION : 000 T
TRACK SPACING : 0.60 NM
FIRST TURN     : RIGHT
CSP            : 41-09.5N 071-07.1W
CORNER PT #1  : 41-09.2N 071-18.7W
CORNER PT #2  : 41-15.2N 071-18.7W
CORNER PT #3  : 41-15.2N 071-06.7W
CORNER PT #4  : 41-09.2N 071-06.7W
```

At 0900 Local you are onboard the AUXFAC SERENDIPITY training with the AUXFAC GOODTIMES in close proximity to the Buzzards Bay Entrance Light. Sector has had a very busy 24hr period and available resources are thin. The Sector has request the SERENDIPITY to assist in the search for the F/V ZEPPLIN.

Search Patterns Lab

**F/V ZEPPLIN
Parallel Search
(continued)**

Additional Information:

AUXFAC SERENDIPITY
Length 43FT
Transit Speed 12 Kts
Search Speed 9 Kts
Crew: 4
Endurance: EST 4 Days
Seas 1FT
Winds ESE/5KTS
Visibility 15NM Ceiling 5000 Broken
Sunrise 0530 Local Sunset 2000 Local
Uncorrected Sweep Width: 9.3

BUZZARDS BAY ENTRANCE LIGHT Information:

Position: 41-23.8N 071-02.0W
Fl2.5s 67ft 17M
Horn
RACON(_...)

Using the ZEPPLIN search pattern information answer the following questions.

1. What is estimated distance from the Buzzards Bay Entrance Light to the CSP?
2. What is the estimated transit time to the CSP?
3. How long will it take to complete the Search Pattern?
4. What is the Coverage Factor?

Search Pattern Lab

F/V ZEPPLIN Parallel Search (continued)

- Using the assigned track spacing, can the AUXFAC SERENDIPY complete the search prior to sunset? If not what track spacing would you need to use to do so?

F/V ZEPPLIN Expanding Square Search Pattern

While conducting the PS for the F/V ZEPPLIN you discover a trash debris trail in position 41-12.0N 071-18.0W. You follow the debris trail back to the position listed below and begin an expanding square search.

Use the following information to plot your search pattern.

EXPANDING SQUARE SEARCH

NAME : F/V ZEPPLIN EXPANDING SQUARE
CENTER : 41-13.8N 071-16.9W
RADIUS : 2.25 NM
ORIENTATION : 075 T
TRACK SPACING : 0.90 NM
FIRST TURN : RIGHT
CSP : 41-13.8N 071-16.9W
CORNER PT #1 : 41-16.6N 071-14.8W
CORNER PT #2 : 41-12.2N 071-13.2W
CORNER PT #3 : 41-11.0N 071-19.0W
CORNER PT #4 : 41-15.4N 071-20.6W

Using the data from the PS search answer the following questions.

- How long will it take to complete the search pattern?
- What is the Coverage Factor and is it good or bad?
- Can you complete the Search prior to daylight?

Search Pattern Lab

S/V ABBY ROAD OVERDUE

It is 0800 and the Sailing Vessel ABBY ROAD has been reported overdue from a day sailing trip. Sector Southeast New England would like you to do a track line search for the S/V ABBY ROAD.

The S/V ABBY ROAD is a 41FT single mast, FIN Keel, Shallow Hull sailing vessel with a green hull, wood deck, white superstructure, and white sails.

Resource Data

AUXFAC: C-172G Tail Number N73MPP (Fixed Wing)

Home Base Location: Martha's Vineyard Airport (41-23.6N 070-36.7W)

Transit Speed: 75KTS

Search Speed: 60KTS

Search Altitude 500FT

Total Hours of Fuel Onboard: 6 Hours

Required Reserve: 1 Hour

Weather / Meteorological:

Seas - 1FT

Winds - ESE/5KTS

Visibility - 15NM Ceiling - 5000 Broken

Sunrise 0530 Local Sunset 2000 Local

Crew Fatigue: NO

S/V ABBY ROAD TRACKLINE Search

Use the following information to plot your search pattern.

TRACK LINE SEARCH

NAME : TRACK LINE SEARCH S/V ABBY ROAD

PASSES : 2

TRACK SPACING: 4.00 NM

FIRST TURN : RIGHT

CSP : 41-36.2N 070-43.1W

WAYPOINTS :

1: 41-36.4N 070-43.5W

2: 41-33.1N 070-46.6W

3: 41-30.9N 070-50.1W

4: 41-28.9N 070-53.6W

5: 41-27.0N 070-59.3W

Search Patterns Lab

S/V ABBY ROAD TRACKLINE Search (continued)

Using the resource information provided calculate and answer the following questions.

1. What is the distance and ETA to the CSP?
2. How long will it take you to complete the search?
3. What is the total length of the trackline search?
4. If you see debris what search pattern should you use and why?

S/V ABBY ROAD VS Search

While you are on the cross leg of the trackline search you see debris on the right hand side of the aircraft.

Use the following information to plot your search pattern.

SECTOR SEARCH

```
-----  
NAME           : SECTOR SEARCH PATTERN S/V ABBY ROAD  
CENTER         : 41-27.0N 071-01.7W  
RADIUS        : 1.00 NM  
ORIENTATION   : 300 T  
SECTORS       : 6  
FIRST TURN    : RIGHT  
CSP           : 41-27.0N 071-01.7W
```

Using the resource information provided calculate and answer the following questions.

1. Is the VS the correct search pattern to use in this case?

Search Pattern Lab

S/V ABBY ROAD VS Search (continued)

2. If you don't spot anything on the first VS what should you do next?
3. All turns in a VS are to the _____?
4. How long will it take you to complete the VS?

You have determined the debris field is nothing more than floating kelp mix with trash. Return to the track line search and update the estimated time to complete.

What is the new search. completion time?

S/V ABBY ROAD Creeping Line Search

As you are approaching the end of the track line search the Sector advises you that updated information leads them to believe an area to the south may be a likely search area. They request you complete your current search, and then search the area to the south. Use the following information to plot your search pattern, and answer the questions.

CREEPING LINE SEARCH

NAME	:	CREEPING LINE PATTERN S/V ABBY ROAD
CENTER	:	41-21.0N 070-57.9W
LENGTH	:	10.40 NM
WIDTH	:	4.00 NM
MAJOR AXIS	:	065 T
MINOR AXIS	:	335 T
CREEP DIRECTION	:	065 T
TRACK SPACING	:	0.80 NM
FIRST TURN	:	RIGHT
CSP	:	41-17.5N 071-02.8W
CORNER PT #1	:	41-25.0N 070-52.7W
CORNER PT #2	:	41-21.4N 070-50.5W
CORNER PT #3	:	41-17.0N 071-03.1W
CORNER PT #4	:	41-20.6N 071-05.3W

Search Patterns Lab

Do you have the fuel to complete the CS and return to base with an hour reserve? (Remember you have to account for the searches prior to this point!)

Do you need to modify the search if so wha. grld bete thcorrect trackur ~~spingr~~

Search Pattern Lab Answers

Answers

The following are the answers for the Search Pattern Lab. The first set of Search Patterns entail plotting only.

F/V TUNA DELIGHT

1. 4 Hours and 9 minutes

$$\text{Time} = \text{Distance} \div \text{Speed}$$

$$\text{Time} = \text{Unknown}$$

$$\text{Distance} = 49.8 \text{ NM}$$

$$\text{Speed} = 12 \text{ Knots (given)}$$

$$\text{Time} = 49.8 \div 12$$

$$\text{Time} = 4.15 = 4 \text{ Hours } 9 \text{ minutes}$$

2. 27 Trackline Miles

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$\text{Distance} = \text{Unknown}$$

$$\text{Speed} = 12 \text{ Knots (given)}$$

$$\text{Time} = 1815 \text{ to } 2030 = 2.25 \text{ Hours}$$

$$\text{Distance} = 12 \times 2.25 = 27 \text{ Trackline Miles}$$

F/V AMANDA KAY

1. 43.4 Trackline Miles

2. 28.9 minutes

$$\text{Time} = \text{Distance} \div \text{Speed}$$

$$\text{Time} = \text{Unknown}$$

$$\text{Distance} = 43.4 \text{ NM (from the plotted pattern)}$$

$$\text{Speed} = 90 \text{ Knots (given)}$$

$$\text{Time} = 43.4 \div 90$$

$$\text{Time} = .48 \times 60 = 28.9 \text{ minutes}$$

3. 326 T
-

Search Patterns Lab Answers

F/V NAVIGATOR 1. 070 T

2. No, 15.38 (15.4) Knots

$$\text{Time} = \text{Distance} \div \text{Speed}$$

Time = Unknown

Distance = 19.23 NM (from the plotted pattern)

Speed = 12 Knots (given)

$$\text{Time} = 19.23 \div 12 = 1.6$$

Time = 1 HR 36 Minutes

$$\text{Speed} = 19.23 \div 1.25 = 15.38 \text{ (15.4) Knots}$$

**P/C WATER
HAMMOCK**

1. 1 Hour and 56.7 minutes

$$\text{Time} = \text{Distance} \div \text{Speed}$$

Time = Unknown

Distance = 19.45 NM

Speed = 10 Knots

$$\text{Time} = 19.45 \div 10$$

Time = 1.945 = 1 hour 56.7 minutes

**S/V CONTRAIL
Answers**

1. 18 Minutes

$$\text{Time} = \text{Distance} \div \text{Speed}$$

Time = Unknown

Distance = 27 NM (9 search legs @ 3 NM each)

Speed = 90 Knots (given)

$$\text{Time} = 27 \div 90$$

Time = .3 = 18 minutes

Search Patterns Lab Answers

F/V ZEPPLIN PS Answers

1. What is estimated distance from the Buzzards Bay Entrance Light to the CSP? **14.78KM**
 2. What is the estimated transit time to the CSP? **Distance / Speed = 14.78NM / 12KTS = 1.23hours**
 3. How long will it take to complete the Search Pattern? **Total Track length is 91.48NM. Distance / Speed = 91.48NM / 9KTS = 10.16 Hours**
 4. What is the Coverage Factor and is it good or bad? **Search Object Length = 54' - $W_u = 11.4$, $f_w = 1.0$, $f_f = 1.0$, $f_v = N/A$ $W = 11.4 * 1 * 1 = 11.4$ $CF = W/C = 11.4NM / .6NM = CF$ of 19 It's a great CF. We could really expand the TS out some.**
 5. Using the assigned track spacing, can the AUXFAC SERENDIPY complete the search prior to sunset? If not what track spacing would you need to use to do so? **Remember you need to take into account transit time. Total Time = 11.39 hours or 11 hours and 24 minutes. Any answer greater than .6NM track spacing will do.**
-

F/V ZEPPLIN SS Search Answers

1. How long will it take to complete the search pattern? **21.64NM * 9 KTS = 2.4 Hours**
2. What is the Coverage Factor? Since debris was spotted the best search target would be a PIW $W_u = 0.3$, $f_w = 1.0$, $f_f = 1.0$, $f_v = N/A$ $W = 0.3 * 1 * 1 = 11.4$ $CF = W/C = 0.3NM / .9NM = CF$ of .33
3. Can you complete the Search prior to daylight? Remember transit time and time to get to that CSP from previous search.

Transit time = 1.23 hours

Time to that position = (5 legs at 8.6NM + 4 crosslegs at 0.6NM)

45.4NM @ 09 KTS = 5.0 hours

Time to complete Expanding Square = 2.4 hours

Total time = 8.63hours or 8 hours 36min +/-5 min

Search Patterns Lab Answers

**F/V ZEPPLIN SS
Search Answers
(continued)**

Initial mission commenced at 0900 and the time we expect to complete the Expanding Square 8.63Hrs later is roughly 17:35. Sunset is at 2000 so we could complete the search.

**S/V ABBY
ROAD TS
Search Answers**

1. What is the distance and ETA to the CSP? **12.15 NM to CSP, D/S=T 12.15NM/75KTS = 0.16hrs**
 2. How long will it take you to complete the search? **D/S=T, 38.91KM / 60KTS = 0.65HRS**
 3. What is the total length of the trackline search? **38.91 KM**
 4. If you see debris what search pattern should you use and why? **VS or a SS because you will be looking for a PIW or Life Raft if one is known to be on board. Depending on time since incident would determine choice of VS or SS.**
-

**S/V ABBY
ROAD VS
Search Answers**

1. Is the VS the correct search pattern to use in this case? **In this case the VS and SS search could be used.**
 2. If you don't spot anything on the first VS what should you do next? **Commence VS again and shit legs 60 degrees to the right.**
 3. All turns in a VS are to the **120° Right?**
 4. How long will it take you to complete the VS? **D/S=T 9.01NM / 60Kts = 0.15HRS or roughly 9 minutes**
-

Search Patterns Lab Answers

**S/V ABBY
ROAD CS
Search Answers**

1. Do you have the fuel to complete the CS and return to base with an hour reserve?

Transit to TS = .16HRS

TS Search = .65 HRS

VS Search = .15 HRS

Transit to CS = .49HRS

Total time to CSP = 1.45HRS

Estimated to Complete CS = 3.38HRS

EST Total Flight Hours = 4.83 Hours

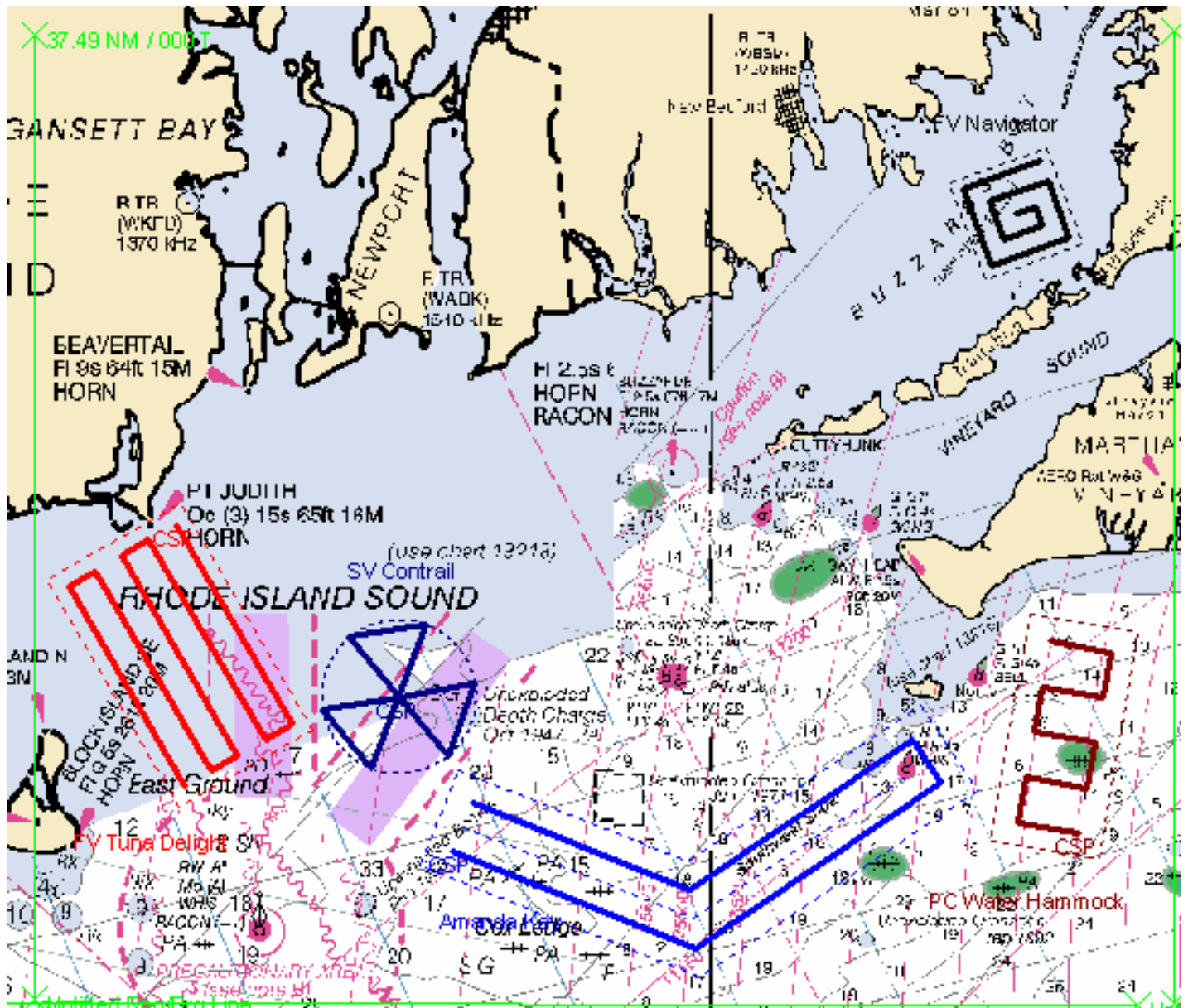
The CS can be completed with the allotted fuel and maintain a 1 hour fuel reserve. If anything is spotted, very little time is remaining for investigation. A more prudent action would be to refuel prior to going out.

2. Do you need to modify the search if so what should be the correct track spacing? **This depends upon what you elect to do in the answer above.**
3. How long will it take to complete the search? $D / S = T$
203.3NM/60KTS = 3.4HRS
4. What is your Coverage Factor? 41' Sailing Vessel $W_u = 10.0$, $f_w = 1.0$
 $f_f = 1.0$, $f_v = 1.1$ $W = 10.0 * 1 * 1 * 1.1 = 11.0$ $CF = W/C = 11.0NM / .8NM = CF$ of 13.75 **This is telling us we have more than enough resources to located the Sailing Vessel.**

Search Pattern Graphics

**Pattern
Graphics
Answers**

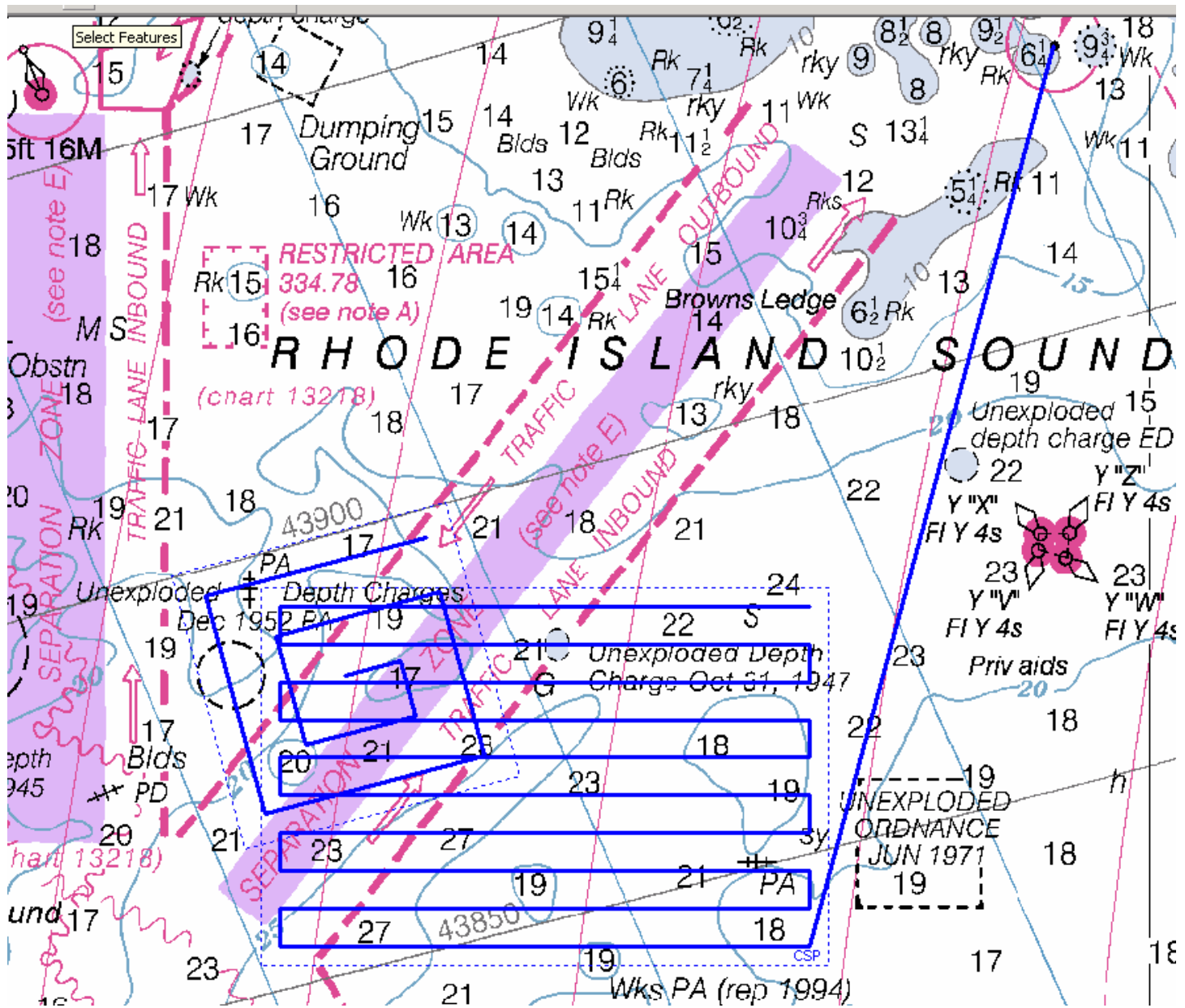
The following graphics are for the search patterns F/V Tuna Delight (PS), F/V Amanda Kay (TS), F/V Navigator (SS), P/C Water Hammock (CS), and S/V Contrail (VS).



Search Pattern Graphics

Pattern Graphics Answers

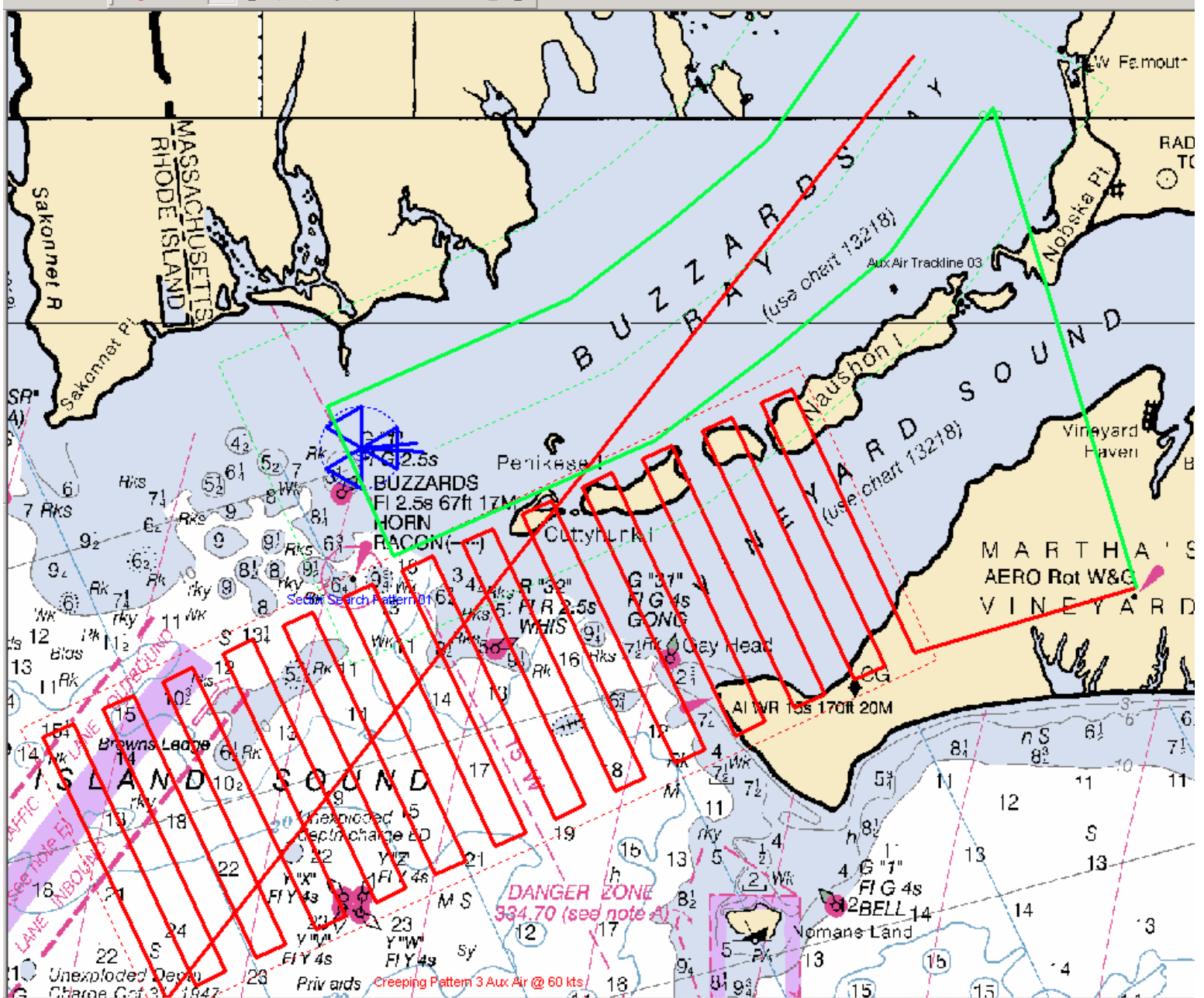
The following graphics are for the search patterns F/V Zeppelin (PS) and (SS)



Search Pattern Graphics

Pattern Graphics Answers

The following graphics are for the search patterns S/V Abby Road (TS), (VS), and (CS).



SAROPS Search Patterns

SAROPS Pattern Example

The following is an example of a search pattern produced by the SAROPS computer software.. It is important to understand when plotting search patterns produced by SAROPS that variances may exist. Some controllers may set the accuracy of the SAROPS program to 1/100000 of a nautical mile and 1/100 of a degree. This is to be expected and will not effect the final result when the boat or aircrew plot patterns.

CREEPING LINE SEARCH

```
-----  
NAME           : A-1-6020-UNTITLED SEARCH PATTERN  
CENTER         : 41-26.6N 070-53.2W  
SEARCH AREA LENGTH : 20.84 NM  
SEARCH AREA WIDTH  : 8.05 NM  
MAJOR AXIS      : 070 T / 085 M  
MINOR AXIS      : 340 T / 355 M  
CORNER PT #1    : 41-33.9N 070-42.0W  
CORNER PT #2    : 41-26.4N 070-38.3W  
CORNER PT #3    : 41-19.3N 071-04.4W  
CORNER PT #4    : 41-26.8N 071-08.1W  
CSP            : 41-20.0N 071-04.0W  
LEG DIRECTION   : 340 T / 355 M  
LEG LENGTH      : 6.95 NM  
FIRST TURN      : RIGHT  
CREEP DIRECTION : 070 T / 085 M  
TRACK SPACING   : 1.10 NM  
MAG VARIATION   : 15 W  
MAGVAR CALCED  : YES
```

```
+-----+  
| ACTUAL SEARCH |  
+-----+
```

```
PERCENT COMPLETED : 100.00 %  
TRACK LENGTH        : 151.92 NM  
ESP                 : 41-33.3N 070-42.3W  
AREA SEARCHED      : 167.76 SQNM  
POS                 : 82.10 %
```

```
+-----+  
| CALCULATE PERCENT COMPLETED |  
+-----+
```

```
TOTAL NUMBER OF LEGS      : 37  
NUMBER OF LEGS COMPLETED : 37.00  
PERCENT COMPLETED       : 100.00 %
```

SRU

SRU ID (TAIL/HULL) : 6020
COMMAND : AS CAPE COD
SRU TYPE : HELO

+-----+
| PRE-SEARCH |
+-----+

CST : 101200Z JUL 07
ON SCENE ENDURANCE : 2.00 HRS
EST : 101400Z JUL 07
SEARCH SPEED : 90.00 KTS
SENSOR : VISUAL
ON SCENE WEATHER : PREDICTED

+-----+
| SEARCH OBJECTS |
+-----+

NAME	SWEEP WIDTH
SPORT BOATS - CENTER CONSOLE	5.23 NM

+-----+
| POST-SEARCH |
+-----+

ACTUAL CST :
ACTUAL EST :
TIME SEARCHED :
AVERAGE SPEED :

+-----+
| ON SCENE WEATHER (VISUAL) |
+-----+

VISIBILITY : 10 FT
WIND SPEED : 15.00 KTS
SEA HEIGHT : 2 FT
CLOUD CEILING : 2500 FT
PREDICTED/OBSERVED : PREDICTED

+-----+
| SRU PROPERTIES: DETAILS (VISUAL) |
+-----+

CREW FATIGUE : NO
SEARCH ALTITUDE : 500 FT

+-----+
| SEARCH OBJECTS (SWEEP WIDTH) |
+-----+

VIEW SWEEP WIDTH : SEARCH OBJECT #1

=====

MODE

SENSOR : VISUAL
SRU : HELO

ON SCENE WEATHER

VISIBILITY : 10.00 NM
WIND SPEED : 15.00 KTS
SEA HEIGHT : 2 FT
CLOUD CEILING : 2500 FT

SEARCH OBJECT CHARACTERISTICS

SEARCH OBJECT : SPORT BOATS - CENTER CONSOLE

(ID) : 47
TYPE : POWER BOAT
LENGTH : 27.0 FT
LENGTH : 27 FT
BEAM : 9 FT
HEIGHT : 6 FT

SRU CHARACTERISTICS

SEARCH SPEED : 90.00 KTS
CREW FATIGUE : NO
SEARCH ALTITUDE: 500 FT

SWEEP WIDTHS

UNCORRECTED: 5.32 NM
X WEATHER CORRECTION FACTOR : 1.00
X FATIGUE CORRECTION FACTOR : 1.00
X SRU SPEED CORRECTION FACTOR: 0.98
= CORRECTED: 5.23 NM

SORTIE SUMMARY

+-----+
| STARTING TRANSIT LEG |
+-----+
START POSITION :
START TRANSIT SPEED : 90.00 KTS
START TRANSIT DISTANCE :
START TRANSIT TIME :
START TIME :
+-----+
| ON SCENE |
+-----+
CSP : 41-20.0N 071-04.0W
CST : 101200Z JUL 07
TRACK LENGTH : 151.92 NM
ON SCENE TIME : 1.99 HRS
ESP : 41-33.3N 070-42.3W
EST : 101359Z JUL 07
+-----+
| ENDING TRANSIT LEG |
+-----+
END POSITION :
END TRANSIT SPEED : 90.00 KTS
END TRANSIT DISTANCE :
END TRANSIT TIME :
END TIME :
+-----+
| TOTALS |
+-----+
TOTAL DISTANCE : 151.92 NM
TOTAL TIME : 1.99 HRS

EVALUATE

SAROPS RUN STATUS : OK
DETAILS: OK

SAROPS RUN IS COMPLETE AND AVAILABLE FOR PATTERN EVALUATION:

D:\DATA_SHARE\ETURNER\SEARCH_PATTERN_EXAMPLE\ALPHA_SEARCH_PATTERN_EXAMPLE\ALPHA_SEARCH_PATTERN_EXAMPLE.MDB

```

+-----+
| SEARCH OBJECTS |
+-----+

```

```

          TYPE                OBJECT POS   POS CONTRIB
-----
SPORT BOATS - CENTER CONSOLE  82.10 %   82.10 %

```

```

TOTAL POS      : 82.10 %
REVIEWED      : NO
COMMENTS      :

```

SORTIE DETAILS

```

-----
LEG      POSITION                COURSE  MAGCSE  LEG DIST  TOTAL DIST  LEG TIME  TOTAL TIME
-----
          T                    M          NM          NM
-----
  1  41-20.0N 071-04.0W      340    355     6.95     6.95    00:05:27    00:05:27
  2  41-26.5N 071-07.2W      070    085     1.10     8.05    00:00:52    00:06:19
  3  41-26.9N 071-05.8W      160    175     6.95    15.01    00:05:27    00:11:46
  4  41-20.3N 071-02.6W      070    085     1.10    16.11    00:00:52    00:12:38
  5  41-20.7N 071-01.2W      340    355     6.95    23.06    00:05:27    00:18:05
  6  41-27.2N 071-04.4W      070    085     1.10    24.16    00:00:52    00:18:57
  7  41-27.6N 071-03.0W      160    175     6.95    31.12    00:05:27    00:24:24
  8  41-21.1N 070-59.9W      070    085     1.10    32.22    00:00:52    00:25:16
  9  41-21.5N 070-58.5W      340    355     6.95    39.17    00:05:27    00:30:43
 10  41-28.0N 071-01.6W      070    085     1.10    40.27    00:00:52    00:31:35
 11  41-28.4N 071-00.3W      160    175     6.95    47.23    00:05:27    00:37:02
 12  41-21.8N 070-57.1W      070    085     1.10    48.33    00:00:52    00:37:54
 13  41-22.2N 070-55.7W      340    355     6.95    55.28    00:05:27    00:43:21
 14  41-28.7N 070-58.9W      070    085     1.10    56.38    00:00:52    00:44:13
 15  41-29.1N 070-57.5W      160    175     6.95    63.33    00:05:27    00:49:40
 16  41-22.6N 070-54.3W      070    085     1.10    64.44    00:00:52    00:50:32
 17  41-23.0N 070-53.0W      340    355     6.95    71.39    00:05:27    00:55:59
 18  41-29.5N 070-56.1W      070    085     1.10    72.49    00:00:52    00:56:51
 19  41-29.9N 070-54.7W      160    175     6.95    79.44    00:05:27    01:02:18
 20  41-23.3N 070-51.6W      070    085     1.10    80.55    00:00:52    01:03:10
 21  41-23.7N 070-50.2W      340    355     6.95    87.50    00:05:27    01:08:38
 22  41-30.3N 070-53.4W      070    085     1.10    88.60    00:00:52    01:09:29
 23  41-30.6N 070-52.0W      160    175     6.95    95.55    00:05:27    01:14:56
 24  41-24.1N 070-48.8W      070    085     1.10    96.65    00:00:52    01:15:48
 25  41-24.5N 070-47.4W      340    355     6.95   103.60    00:05:27    01:21:15
 26  41-31.0N 070-50.6W      070    085     1.10   104.71    00:00:52    01:22:07
 27  41-31.4N 070-49.2W      160    175     6.95   111.66    00:05:27    01:27:34
 28  41-24.8N 070-46.1W      070    085     1.10   112.76    00:00:52    01:28:26
 29  41-25.2N 070-44.7W      340    355     6.95   119.71    00:05:27    01:33:53
 30  41-31.8N 070-47.9W      070    085     1.10   120.81    00:00:52    01:34:45
 31  41-32.1N 070-46.5W      160    175     6.95   127.76    00:05:27    01:40:12
 32  41-25.6N 070-43.3W      070    085     1.10   128.87    00:00:52    01:41:04
 33  41-26.0N 070-41.9W      340    355     6.95   135.82    00:05:27    01:46:31
 34  41-32.5N 070-45.1W      070    085     1.10   136.92    00:00:52    01:47:23
 35  41-32.9N 070-43.7W      160    175     6.95   143.87    00:05:27    01:52:50
 36  41-26.4N 070-40.5W      070    085     1.10   144.97    00:00:52    01:53:42
 37  41-26.7N 070-39.2W      340    355     6.95   151.92    00:05:27    01:59:09
 38  41-33.3N 070-42.3W      -----  -----  -----  151.92  -----  01:59:09

```