1 Look at the map and photograph. What particular problems could a pilot of this type of aircraft have on a long flight across an ocean.

2 Match the words below with the definitions a-f.

- a: the longest time an aircraft is able to fly without stopping
- b: a position in space, usually on a flight plan
- c: to use mathematics to find out something
- d: a situation which is non-routine, and potentially dangerous
- e: the line on a map that an aircraft follows
- f: an activity which is part of your job

3 Read the text about the flight opposite. Label the pilot’s route on the map.

4 Complete Prochnow’s flight plan.

5 Read the text again and answer the questions.

   1. Who did Prochnow work for?
   2. What navigational equipment did he have on board?
   3. Why did he leave Pago Pago at 0300?
   4. Why did he fly on his compass from Ono-I-Lau to Norfolk Island?
   5. When did Prochnow realize there was a problem?

---

Solo flight to Norfolk Island

In 1978, pilot Jay E. Prochnow was working for an aircraft sales company in Oakland, California. An experienced civil and military pilot, Prochnow was given the task of delivering a Cessna 188 single-handed from Oakland, USA to Australia. Because the flight covered thousands of miles over open ocean, the aircraft was fitted with extra fuel tanks for the journey. Apart from charts and a compass, the only navigation equipment he had was an ADF for picking up the HF signals of NDBs scattered across the tiny islands of the Pacific Ocean. At the time, this crossing was a long trip even for big jets. For a single-engine aircraft with one crew, this was a long and dangerous mission.

After a stopover in Hawaii, he completed the second leg of the journey on schedule, and arrived on the Samoan island of Pago Pago without incident. The pilot rested for one day before he began the third leg of the trip, and he spent his time on the island preparing for the long and tiring flight ahead. The charts showed a distance of almost 1500 nm to Norfolk Island. Prochnow calculated a flying time of fifteen hours minimum, cruising at 110 knots in good VFR conditions with a light wind. He decided to carry maximum fuel and he filled the tanks to give a total endurance of twenty-two hours.

He planned his flight well. He departed Pago Pago at 0300 and with fifteen hours of daylight in front of him, he could make visual contact with the fixes and his destination below him. Using the NDBs, Prochnow navigated successfully to the fix of the island of Ono-I-Lau, almost directly on route. Now his task was to fly the remaining 850 nm of empty ocean to Norfolk Island with no navigation aids at all. Now he flew by compass alone. A few hours later he came into range of the Norfolk NDB, and he flew a heading indicated by the ADF. As he approached the FUA he looked carefully for the island, but it wasn’t in sight.

6 Look at this website for light aircraft pilots. Complete the sentences with words from the text above.

---

Tips for long distance light aircraft pilots

Try not to fly (1) s ______ - ______ - ______ – fly with an experienced crew. Successfully complete an emergency training course before you depart. Plan your flight carefully – plan a (2) s ______ of rest days. Fit extra fuel (3) t ______ for the longer (4) l ______ of the flight. Try not to (5) c ______ long distances over water. Plan your clearance(s) at each (6) d ______ before you depart. Carry all flight plans, clearances and (7) c ______ for the complete journey.

7 Work with a partner. What other tips can you think of for pilots like Prochnow? Try to find at least two more. Feed back to the class.

---

Functional English – Explaining acronyms

1 Here are some common expressions for asking or saying what acronyms mean. Do you know what these acronyms stand for?

   - What does NDB stand for? It stands for ______
   - What does ADF mean? It means ______
   - What is VFR short for? It’s short for ______

2 Work in pairs. You are going to practise saying and explaining acronyms. Student A go to page 10, column 1. Student B go to page 10, column 2.
UNIT 2

Section 2 - Finding Flight N45AC

Listening - Auckland Control Centre

1. Look at the pictures of what happened next in the Prochnow story. Try to put them in the correct order.

2. 2.2.1. Listen and check your answers.

3. 2.2.1. Listen again and circle the correct answer:
   - Prochnow contacted
     a) other aircraft in the area
     b) Auckland ATC for help.

4. A commercial jet made
   a) visual contact
   b) radio contact.

5. Both aircraft flew towards the sun to establish their
   a) heading
   b) position.

6. Captain Vette tried to establish Prochnow’s exact position using Prochnow’s
   a) radio signal
   b) transponder.

7. They established the coordinates for
   a) Prochnow
   b) Norfolk Island.

Pronunciation – Coordinates

1. 2.2.2. Listen and complete the coordinates:
   - Vette: Turn towards the sun and report your heading.
   - Prochnow: Wilco. My heading is (1) ________.
   - Vette: Sunset on Norfolk Island is 7:30 zulu. That means you are (2) ________ and (3) ________ of Norfolk Island.
   - Vette: Your coordinates are (4) ________ from Norfolk Island.

2. 2.2.2. Now listen and repeat.

3. Work in pairs. Student B looks at page 10. Student A looks at this page. Ask Student B what places are at the following coordinates. Write the names of the places in the approximate position on your map.
   - north south east west south-east south-west north-east
     27°4’ 56°E 30°S 170° 21° E 14°32’40.25’N

Pronunciation – Regular past tense endings

1. 2.2.3. Regular verbs in the past tense have three different sounds at the end of the verb. Listen and notice the verb endings.
   - /t/ We received news of your situation
   - /d/ the ADF stopped working correctly
   - /id/ I wanted to have enough light to see my fixes

2. Put the verbs into groups according to the sound of their ending.
   - contacted
east departed established tried calculated followed talked arrived approached
   - 1 /t/
   - 2 /d/
   - 3 /id/

3. 2.2.4. Now listen and repeat.

4. Work in pairs. Use words on the right to help you tell the story of Prochnow’s flight. Student A, tell the first part of the flight. Student B, tell the second part of the flight. Use the past tense.

For more practice with the past tense, look at Section 4.

Student A look at this page. Ask student B what places are at the following coordinates. Write the names of the places in the approximate position on your map.

1. 31°03'44.28"S, 170°21'07"E 3 20°39'46.39"S 178°43'14.68"W
2. 14°19'53.20"S, 170°42'33.74"W 4 36°55'23.43"S 174°45'16.22"E

example:

What do you have at three-one degrees, three minutes, four decimal two-eight seconds south, one-seven-zero degrees, two-one minutes, seven-zero seconds east?
UNIT 2

Section 3 - Lost

1 Match the features in the box to labels 1-11 on the map.

- river
- woods
- highway
- mast
- coast
- power lines
- lake
- valley
- built-up area
- fields
- high ground

Listening - Lost pilot

2 2.3.1 You are going to hear the first part of a dialogue between a lost pilot and an ATC.
1 What is the most important information a disoriented pilot needs to give an ATC?
2 Now listen to the dialogue and tick the information the ATC asks for:
   - departure airport
   - type of aircraft
   - speed
   - altitude
   - endurance
   - destination
   - last known position

3 2.3.2 Listen again and complete the report.

4 2.3.2 Listen again and complete the report. Listen to the next part of the conversation and tick the features they describe.

5 2.3.2 Listen again and draw the pilot's track on the map.

Location report

- Call sign: Tango India Golf Juliet Bravo
- Last known position:
  - 16 miles (1)
  - of CELRA VOR
- Aircraft: Dash 6
- Altitude: (2)
- Speed: (5) knots
- Fuel: (4) lbs
- Persons on board: (5)
- Endurance: (6) hour
- Grid reference: X:

Functional English - Confirming and disconfirming

1 2.3.2 Listen to the dialogue again and complete the sentences below. They all ask for or give confirmation or disconfirmation.

1 _______ you fly into VFR? ✓
2 _______ you make out a road.
3 _______ the river on the north side of the road?
4 _______ the road on the north side of the river?
5 _______ a communications mast at twelve o'clock, at about four miles?

2 2.3.2 Listen again. Tick where the pilot gives confirmation. Cross where the pilot disconfirms.

3 2.3.3 Before you listen, discuss with a partner which sentence you think is spoken more clearly, (1) or (2). Then listen and check if you were right. Discuss the reason for this.

ATC Tango Juliet Bravo. (1) Is the highway now on the south side of the river?
Pilot Negative. The highway is now on the north side of the river. The highway is now running north east.
ATC (2) Confirm that the highway is on the north side of the river.
Pilot Affirmative, sir. The highway is on the north side of the river.

4 Work in pairs. Student B, turn to page 11. Student A, you are a pilot who is lost and low on fuel. Look at this page. Describe your position to Student B - the ATC - who will direct you to the nearest airstrip using visual fixes. Use the phrases from exercise 5 for confirming and disconfirming.
2 Complete the conversation with questions.

Journalist Why (1) ________ (you / make) an emergency landing?

Captain Because we thought we could smell smoke on the flight deck.

Journalist When (2) ________ (you / notice) the problem?

Captain About 40 minutes after we left Seoul.

Journalist (3) ________ (you / decide) to land immediately?

Captain Yes, of course.

Journalist Why (4) ________ (you / land) at Taegu?

Captain We descended to Taegu because it was our closest airfield, of course.

Journalist How (5) ________ (the fire / start)?

Captain We're not really sure -- perhaps it was an electrical fault.

Journalist How many passengers (6) ________ (you / have) on board?

Captain We had 18 passengers with us.

Functional English – Confirmation

Complete the dialogue with the words in the box.

affirmative can see confirm that give further negative say last that correct what you

Pilot Mayday. Mayday. Mayday. Tibrak Centre, India Gold two one. We're lost.

ATC India Gold two one Tibrak Centre. Roger emergency. (1) ________ known position.

Pilot Last known position was one zero miles north of Tibrak.

ATC India Gold Echo. Last known position was one zero miles north of Tibrak. Is (2) ________?

Pilot (3) ________ Confirm last known position was one zero miles north of Tibrak.

ATC India Gold Echo. Please tell me (4) ________ now.

Pilot I (5) ________ a communications mast directly west and a lake below me.

ATC India Gold Echo. (6) ________ you can see a communications mast to the east.

Pilot (7) ________ The communications mast is to my west.

ATC India Gold Echo. Turn left 45 degrees and head west to the communications mast. We'll pick you up on radar from there and (8) ________ instructions.

Vocabulary

1 Match these verb and noun combinations from the text Lost. Then check in the text.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>cover</td>
<td>complete</td>
<td>cruise</td>
<td>make</td>
<td>write</td>
<td>fly</td>
<td>come</td>
<td>approach</td>
</tr>
<tr>
<td>a) by compass</td>
<td>b) the second leg</td>
<td>c) thousands of miles</td>
<td>d) into range of an NDB</td>
<td>e) the ETA</td>
<td>f) at 110 knots</td>
<td>g) a fix</td>
<td>h) visual contact with a fix</td>
</tr>
</tbody>
</table>

2 Write the words below in the appropriate category. Use your dictionary to help you.

- bridge
desert
footpath
cemetery
farmland
high terrain
lighthouse
harbour
marshland
plain
ridge
urban area

<table>
<thead>
<tr>
<th>type of land</th>
<th>feature</th>
</tr>
</thead>
</table>
Macmillan Aviation English | Student's Book with 2 CD-ROMs | 978-3-19-032884-0, Hueber Verlag
Unit 2 Section 3 - Functional English - Confirming and Disconfirming

Student B
Ask Student A to describe their position using visual fixes. Direct them to the airstrip, getting them to confirm or disconfirm what they can see along the way.

Unit 2 Section 2.2 - Pronunciation Coordinates p.4

Student B
Ask Student A what places are at the following coordinates. Write the names of the places in the approximate position on your map.

example
What do you have at two-nine degrees, two minutes, four-nine decimal seven-eight seconds south, one-six-seven degrees, five-seven minutes, four-two decimal nine-eight seconds east?

1 23°22'20.45"S 167°56'23.33"E
2 17°45'36.72"S 177°26'30.93"E
3 22°30'37.07"S 171°21'17.21"E
4 33°51'29.41"S 151°12'37.52"E
Section 1

Activity 1

a) endurance  b) fix  c) calculate  d) incident  e) track  f) task

Activity 2

1. Cessna 188 2. 0300 3. 1500 nm 4. 22 hours 5. 15 hours 6. 110 knots

Activity 5

1. An aircraft sales company 2. Charts, a compass and an ADF 3. To give maximum daylight hours 4. There were no navigation aids 5. When he couldn’t see Norfolk Island

Activity 6


Activity 7

Travel during daylight. Avoid areas with no fixes.

Functional English

Activity 1

It stands for non-directional beacon. It means automatic direction finder. It’s short for visual flight rules.

Section 2

Activity 1/2
d/e/a/b/c

Activity 3

1b 2b 3b 4s 5a

Pronunciation – Coordinates

Activity 1

1. 27° 6.5°E 2. 30° 6.5°S 3. 17° 21°E 4. 150 miles

Activity 3


Answer key

Pronunciation – regular past tense endings


Section 3

Activity 1


Activity 2

1. last known position 2. last known position/aircraft type/number of passengers/speed/altitude

Activity 3

1. south east 2. 5300 3. 110 4. 780 5. 8 6. 61/30

Activity 4

1. trees, fields, high ground, built up area, river, highway, mast

Functional English

Activity 1


Activity 2

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. were not

Language review

Activity 1

1. made 2. happened 3. reported 4. departed 5. flew 6. did not reach 7. landed 8. believed 9. was 10. were not

Activity 2

1. did you make 2. did you notice 3. did you decide 4. did you land 5. did the fire start 6. did you have

Functional English

1. say last 2. that correct 3. affirmative 4. what you 5. can see 6. confirm that 7. negative 8. give further

Vocabulary

Activity 1