

T. Vigod

CONSOLIDATED HEARINGS BOARD

IN THE MATTER OF Sections 2 and 3 and 6 (3) of the Consolidated Hearings Act, 1981, S.O. 1981, c.20;

— and —

IN THE MATTER OF Section 12(2) of the Environmental Assessment Act, R.S.O. 1980, c.140;

— and —

IN THE MATTER OF Sections 30, 35 and 38 of the Environmental Protection Act, R.S.O. 1980, c.141, as amended;

— and —

IN THE MATTER OF Sections 24 and 61 (2) of the Ontario Water Resources Act, R.S.O. 1980, c.361, as amended;

— and —

IN THE MATTER OF Section 28 (3) of, and Regulation 164 under, the Conservation Authorities Act, R.S.O. 1980, c.85, as amended;

— and —

IN THE MATTER OF Section 40(12) of the Planning Act, S.O. 1983, c.1, as amended; in connection with site plan control of the sanitary landfill site;

— and —

IN THE MATTER OF Section 22(1) of the Planning Act, 1983 in connection with a referral to this Board by the Honourable Bernard Grandmaitre, Minister of Municipal Affairs, on a request by the Regional Municipality of Halton to amend the Official Plan for the Town of Milton to redesignate a parcel of land comprising Part Lots 3 and 4, Concession 2 N.S. in the Town of Milton from "Agriculture" and "Conservation and Hazard Lands" to permit the construction, operation and maintenance of a landfill site, Minister's File No. 24-OP-0208-A01;

— and —

IN THE MATTER OF Section 34(11) of the Planning Act, 1983 in connection with an appeal to this Board by the Regional Municipality of Halton for an order directing an amendment to By-law 61-85 of the Town of Milton to rezone the lands situated at Lot 3 and part of Lot 4, Concession 2 N.S., in the Town of Milton from "Agriculture" to permit a regional sanitary landfill site and ancillary uses;

— and —

IN THE MATTER OF Section 15(1) of the Planning Act, R.S.O. 1980 ch.379 in connection with a referral by the Honourable Claude F. Bennett, Minister of Housing on a request by Tremaine Britannia Citizen's Group for consideration of part of the Official Plan for the Halton Planning Area with respect to Sections 1 to 5 inclusive, 7, 9 and 10 of Part III D3 Solid Waste Management, Minister's File No. OPC-0026;

— and —

IN THE MATTER OF Section 64 of the Ontario Municipal Board Act, R.S.O. 1980, c.347 as amended in connection with an application by the Regional Municipality of Halton for an order approving:

- a) the acquisition of land for the construction, operation and maintenance of a sanitary landfill site to contain 7.96 million cubic metres of waste in the Regional Municipality of Halton and to do so by one of two alternative methods as follows:
- (i) landfilling at the site referred to in Halton's Environmental Assessment as Site F in the City of Burlington;
 - (ii) landfilling at the site commonly referred to in Halton's Environmental Assessment as Site D in the Town of Milton

at an estimated cost of \$12,775,000.00, and the borrowing of money by way of temporary advances not exceeding in the aggregate such estimated cost pending the sale of debentures, and

- (b) the issuance of necessary debentures to a maximum of \$12,775,000.00 for a term not to exceed fifteen years;

— and —

IN THE MATTER OF Section 193(5) and Paragraph 84 of Section 210 of the Municipal Act, R.S.O. 1980, c.302, as amended;

— and —

IN THE MATTER OF Sections 6, 7 and 8 of the Expropriations Act, R.S.O. 1980, c.148;

— and —

IN THE MATTER OF an undertaking of the Regional Municipality of Halton to provide facilities for the purpose of receiving, dumping and disposing of waste as required by section 137 of the REGIONAL MUNICIPALITY OF HALTON ACT, R.S.O. 1980, c.436, as amended, by acquiring the land for, constructing, operating and maintaining a landfill to contain 7.96 million cubic metres of waste in the Regional Municipality of Halton.

VOLUME: 72

HELD AT: Oakville, Ontario

DATE: January 12, 1988

OFFICIAL REPORTERS

NETHERCUT & COMPANY LTD.

185 RICHMOND ST. W.,

TORONTO, ONT. M5V 1V3

TEL: 593-4802

RECEIVED
JAN 20 11:33
T. VIGOD



I N D E X

WITNESS:

WILLIAM JOHN RICHARDSON (Affirmed)

Examination in chief by Mr. Estrin	16856
Cross-examination by Mr. Griffiths	16965
Cross-examination by Mr. Lederer	16966

E X H I B I T S

<u>NO.</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
M-389	Witness Statement of Dr. W.J. Richardson	16855
M-390	Report of Dr. Richardson	16855
M-391	CV of Dr. Richardson	16855
M-392	Publications of Dr. Richardson	16856
M-393	Overlay	16876
M-393-A	Amended overlay	16882
M-394	Witness Statement of Mr. McDonald	16894
M-395	"Daily Commuting Cycle of Gulls"	16904
M-396	Weekly Fluctuation in the Number of Gulls	16905
M-397	Gull Site Data & Map	16907
M-398	Diagram of Toronto Harbour Area	16925
M-399	Diagram Showing Bird Netting	16950
M-400	M. M. Dillon Report of 1978 by LGL Limited	17018
H-402	1984 CATA Report	17062



THE CONSOLIDATED HEARINGS BOARD

1 IN THE MATTER OF Sections 2 and 3 and 6(3) of the
2 Consolidated Hearings Act, 1981, S.O. 1981, c. 20;

- and -

3 IN THE MATTER OF Sections 12(2) of the Environmental
4 Assessment Act, R.S.O. 1980, c.140;

- and -

5 IN THE MATTER OF Sections 30, 35 and 38 of the
6 Environmental Protection Act, R.S.O. 1980, c.141, as
7 amended;

- and -

8 IN THE MATTER OF Sections 24 and 61(2) of the Ontario
9 Water Resources Act, R.S.O. 1980, c.361, as amended;

- and -

10 IN THE MATTER OF Section 28(3) of, and Regulation 164
11 under, the Conservation Authorities Act, R.S.O. 1980,
12 c.85, as amended;

- and -

13 IN THE MATTER OF Section 40(12) of the Planning Act,
14 S.O. 1983, c.1, as amended; in connection with site
15 plan control of the sanitary landfill site;

- and -

16 IN THE MATTER OF Section 22(1) of the Planning Act,
17 1983 in connection with a referral to this Board by the
18 Honourable Bernard Grandmaitre, Minister of Municipal
19 Affairs, on a request by the Regional Municipality of
20 Halton to amend the Official Plan for the Town of
21 Milton to redesignate a parcel of land comprising Part
22 Lots 3 and 4, Concession 2 N.S. in the Town of Milton
23 from "Agriculture" and "Conservation and Hazard Lands"
24 to permit the construction, operation and maintenance
25 of a landfill site, Minister's File No. 24-OP-0208-A01;

- and -

17 IN THE MATTER OF Section 34(11) of the Planning Act,
18 1983 in connection with an appeal to this Board by the
19 Regional Municipality of Halton for an order directing
20 an amendment to By-law 61-85 of the Town of Milton to
21 rezone the lands situated at Lot 3 and part of Lot 4,
22 Concession 2 N.S., in the Town of Milton from
23 "Agriculture" to permit a regional sanitary landfill
24 site and ancillary uses;

- and -

21 IN THE MATTER OF Section 15(1) of the Planning Act,
22 R.S.O. 1980 ch.379 in connection with a referral by the
23 Honourable Claude F. Bennett, Minister of Housing on a
24 request by Tremaine Britannia Citizen's Group for
25 consideration of part of the Official Plan for the
Halton planning Area with respect to Sections 1 to 5
inclusive, 7, 9 and 10 of Part III D3 Solid Waste
Management, Minister's File No. OPC-0026;



- and -

IN THE MATTER OF Section 64 of the Ontario Municipal Board Act, R.S.O. 1980, c.347, as amended in connection with an application by the Regional Municipality of Halton for an order approving:

(a) The acquisition of land for the construction, operation and maintenance of a sanitary landfill site to contain 7.96 million cubic metres of waste in the Regional Municipality of Halton and to do so by one of two alternative methods as follows:

(i) landfilling at the site referred to in Halton's Environmental Assessment as Site F in the City of Burlington;

(ii) landfilling at the site commonly referred to in Halton's Environmental Assessment as Site D in the Town of Milton.

at an estimated cost of \$12,775,000.00 and the borrowing of money by way of temporary advances not exceeding in the aggregate such estimated cost pending the sale of debentures, and

(b) the issuance of necessary debentures to a maximum of \$12,775,000.00 for a term not to exceed fifteen years;

- and -

IN THE MATTER OF Section 193(5) and Paragraph 84 of Section 210 of the Municipal Act, R.S.O. 1980, c.302, as amended;

- and -

IN THE MATTER OF Sections 6, 7 and 8 of the Expropriations Act, R.S.O. 1980, c.148;

- and -

IN THE MATTER OF an undertaking of the Regional Municipality of Halton to provide facilities for the purpose of receiving, dumping and disposing of waste as required by section 137 of the REGIONAL MUNICIPALITY OF HALTON ACT, R.S.O. 1980, c.436, as amended, by acquiring the land for, constructing, operating and maintaining a landfill to contain 7.96 million cubic metres of waste in the Regional Municipality of Halton.

BEFORE: H. H. Lancaster, Q.C. - Chairman

Dr. D.J. Kingham - Member



Hearing conducted at The Oakville
Granary Commercial Centre, 105 Robinson
Street, Oakville, Ontario, on Tuesday,
January 12, 1988

VOLUME 72

APPEARANCES:

T.R. Lederer and H.D. Hodgson	for the Regional Municipality of Halton (Proponent)
J.R. Tidball	for the Ministry of the Environment
T. Vigod J.F. Castrilli	for the West Burlington Citizens Group
D. Estrin, F.E. Leitch and H. Dahme	for the Corporation of the Town of Milton
S.R. Garrod and A. Nurvo	for the Milton Area Citizens Coalition and several affected Milton area landowners
R.B. Tuer, Q.C. E.A. Cronk and F. Perrier L. J. Griffiths	for National Sewer Pipe Limited
L.F. Longo	for Azova Investments Limited
M.J. McQuaid, Q.C. and C.J. Tzekas	for the City of Burlington
C. Mansfield	for the Ministry of Natural Resources
P. Renaud	for Cumis Limited



Nethercut & Co. Ltd.

Toronto, Ontario

APPEARANCES (Cont'd):

1	C. Stevenson	for Framgard Holdings,
2	P. Hancock	Fosseri Investments
3		Limited, Seriphos
		Investments Limited and
		Topic Investments
4	J.H. Olah	for the Halton Region
5		Conservation Authority
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

* * * * *

Nethercut & Co. Ltd.
Official Reporters
185 Richmond St. W.
Toronto, Ontario
M5V 1V3

Per: P. D. McQueen



1 --- Upon Commencing at 9:30:

2 MR. LANCASTER: Good morning, please be
3 seated and welcome to 1988. May it be a prosperous and
4 productive year.

5 MR. LEDERER: Productive anyway, sir.

6 MR. LANCASTER: I think, Mr. Estrin,
7 that you were to call the next witness?

8 MR. ESTRIN: Yes. Mr. Chairman, as
9 you know we have spent a lot of time in the field and
10 down on the ground and we thought it would be
11 appropriate to start the new year by looking up in the
12 air for a while. Hopefully not too high.

13 So, our next couple of experts will be,
14 indeed there will be three witnesses we will be calling
15 on the topic of bird hazards and landfills. The first
16 witness this morning will be Dr. John Richardson. I am
17 going to give you a witness statement and his report in
18 a minute.

19 Following his testimony the next witness
20 will be Mr. Kovachik who is the owner of the Burlington
21 Air Park to tell you some facts related to that
22 operation.

23 The third witness and the last witness
24 in this area called by the Town of Milton will be
25



Mr. Paul McDonald who is with Transport Canada.

1 Everyone except the Board has had copies
2 of Dr. Richardson's report for some time. The witness
3 statement for Dr. Richardson was distributed in late
4 December.

5 So, if I may I will give you a copy of
6 the witness statement for Dr. Richardson as well as his
7 report. The report is dated September '87 and if I
8 could, it might be appropriate, there is also another
9 document which should be filed at this time, and that
10 is, a curriculum vitae for Dr. Richardson which
11 everyone has had already.

12 There is one other document related to
13 Dr. Richardson which parties don't have but it is
14 simply his publications and reports on birds. I will
15 give you that fourth document.

16 MR. LANCASTER: If that is your filings
17 we will number them now. The witness statement we will
18 number Exhibit M-389. The witness statement of
19 Dr. John Richardson. The report M-390. The
20 curriculum vitae M-391.

21 ---EXHIBIT NO. M-389: Witness statement of
22 Dr. John Richardson

23 ---EXHIBIT NO. M-390: Report of Dr. John Richardson

24 ---EXHIBIT NO. M-391: Curriculum Vitae of
25 Dr. John Richardson

MR. LANCASTER: And the list of



publications will be marked M-392.

1
2 ---EXHIBIT NO. M-392: Publications of Dr. John
Richardson

3 MR. LANCASTER: Thank you. I wonder
4 then if we could call Dr. Richardson to the stand and I
5 believe he would like to affirm.

6 WILLIAM JOHN RICHARDSON (Affirmed):
7 EXAMINATION BY MR. ESTRIN:

8 MR. ESTRIN: I recall Ms. Vigod saying
9 at some point last year that she had a throat
10 affliction that was a lawyer's nightmare. It certainly
11 is and it would also be a nightmare for witnesses.
12 Dr. Richardson is taking penicillin for a throat
13 infection. He tells me his voice is better in the
14 morning than it may be in the afternoon.

15 Q. Dr. Richardson, I would like to
16 start by referring to your curriculum vitae which has
17 been marked as Exhibit M-391. There are a number of
18 activities recited on there.

19 Is it fair to say in a summary way that
20 one of your areas of specialty is bird hazards to
21 aircraft?

22 A. Yes, that is correct.

23 Q. I would like to ask you before we
24 get into your Ph. D work and some of the other work in
25 this area, you were previously retained, I guess we



1 should back up. You are with the firm of LGL?

2 A. Yes, I am.

3 Q. And you are vice-president of
4 research of LGL Limited. Generally what does that firm
5 do?

6 A. LGL Limited conducts biological
7 research primarily in the field of environmental
8 research in Canada and the United States under contract
9 to governments and industry in a wide variety of fields
10 involving environmental studies.

11 Q. In 1978 your firm and in
12 particular you were retained on behalf of Halton
13 Region through M. M. Dillon consultants to assess
14 potential bird hazards to aircraft in relation to the
15 proposed landfill site by Halton Region at that time?

16 A. Yes, I was.

17 Q. If you look behind you there is a
18 topographic map which has been marked as Exhibit H-274
19 and you will recall I think that the site you were
20 considering at that time was generally around the
21 intersections of Tremaine and Britannia Road and is
22 noted generally by the letter "E" on that; correct?

23 A. Right.

24 Q. You were asked in 1978 through
25



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

Dillon Consultants to prepare a report for the region in respect of potential hazards that may be created by that landfill in relation to birds and aircraft?

A. Yes, I was and we did prepare such a report.

Q. Were you called as a witness on behalf of Halton Region during that hearing?

A. Yes, I was.

Q. Your Ph. D is stated to be in animal behaviour. What kind of animals are we talking about?

A. My research for my degree was on birds and specifically with movements of birds in various parts of Canada and elsewhere.

Q. In the years preceding your Ph. D much of that research, I understand, was sponsored by something called the Associate Committee on Bird Hazards to Aircraft?

A. Yes. Previous to beginning by Ph. D program I was employed by and under contract by the Canadian Wildlife Service on behalf of the National Research Council's bird hazard to aircraft program for the four summers while I was an undergraduate to study local and migratory movements of birds in



1 southern Ontario and elsewhere in Canada.

2 Then my research for my doctorate at
3 Cornell was funded directly under contract from the
4 NRC's bird hazards to aircraft committee.

5 Q. I know we are going to be hearing
6 from Mr. McDonald in this regard to Transport Canada
7 and its work. Could you just briefly tell us about the
8 bird hazard committee or what its essential purpose was
9 as you understood it at the time you were doing
10 research for it?

11 A. The National Research Council was
12 the main group and an associate committee on bird
13 hazards to aircraft and had representatives from other
14 participants like the Canadian Wildlife Service and the
15 airlines and so on that had an interest in the problem
16 of birds colliding with aircraft.

17 Their purpose was to conduct, sponsor
18 research into methods of reducing the frequency and
19 hazard associated with birds colliding with aircraft.
20 Not only in Canada but elsewhere. That committee was
21 quite a pioneering group in that field and in many
22 respects led the way for other countries.

23 Q. Now, with respect to your
24 curriculum vitae. On the first page you say under the
25 heading "Major Activities" have included the following,



1 then you say study of migratory and local movements of
2 birds in various places. These projects involve either
3 biological or bird hazard to aircraft objectives.

4 Can you tell us very briefly about some
5 of your involvement in assessing bird hazards to
6 aircraft in particular with regard to landfills?

7 A. Probably the major projects that I
8 have been involved in since completing my degrees and
9 starting to work with LGL have been in the early 1970's
10 we conducted a study over a period of about 15 months
11 or so of field work looking into bird movements and
12 potential bird hazards in the general Toronto region,
13 from approximately Brampton to Oshawa on behalf of
14 Transport Canada, under contract to Transport Canada.

15 The purpose of that study was to
16 investigate the likely bird hazards if an airport was
17 constructed at the then proposed Pickering site east of
18 Toronto.

19 So as part of that study, I was
20 responsible for the part of it that dealt with radar
21 and some visual studies of migratory and some of the
22 local movements of birds in the general Toronto region.
23 That was quite a major investigation and it produced
24 some results relevant to the situation we are dealing
25 with here.



One of the other major studies I have been involved in was a study again involving somewhat over a year of field work in the Niagara Falls, New York area where a landfill site was in operation adjacent or near the Niagara Falls, New York international airport.

Our company was retained to evaluate the effectiveness of a method of controlling birds, particularly gulls at that landfill so as to reduce the bird hazards to aircraft. I was the project director for that project. Those are a couple of the major studies, there are other small ones.

Q. The 1984 field investigation in the Niagara area resulted in a report which I believe is referred to as the 1984 report. It is under the heading "Reports"?

A. Yes. It would be under the heading reports. In 1984 a report by McLaren, Harrison & Richardson.

Q. There is also a publication related to the same matter I believe under the sub-heading of publications 1984 by McLaren, Harrison & Richardson?

A. That is correct.

Q. That is the proceedings of the



1 Wildlife Hazards to Aircraft Conference and published
2 in the American Federal Aviation administration
3 document?

4 A. Yes.

5 Q. I believe you also did some work
6 in respect of the Vancouver airport?

7 A. I was involved in that planning
8 and some parts of the work on a study that we did, LGL
9 did for the bird hazard to aircraft committee of NRC
10 back in the early seventies concerning bird hazards to
11 aircraft at Vancouver airport. Again part of that study
12 involved gulls commuting from water to landfill sites
13 or other places where food was available.

14 Q. I believe just before Christmas,
15 in fact about mid-December, you were in Alaska
16 dealing with a matter of landfills and bird hazards?

17 A. Again LGL has a project going on
18 at the present time to assist the City of Anchorage
19 Alaska in developing a method of reducing the
20 attraction of birds to a new landfill site that they
21 have just recently opened adjacent to an army base that
22 has helicopter and fixed winged aircraft traffic where
23 they have to control birds so they don't create a
24 hazard to aircraft.

25 Q. I think with that information,



1 Mr. Chairman, you will agree that Dr. Richardson is
2 very well qualified to testify and give opinion
3 evidence with respect to bird hazards?

4 MR. LANCASTER: He is acceptable.

5 MR. ESTRIN: Q. Dr. Richardson, in
6 addition to that experience and expertise you are not
7 here to testify as an expert in the area of aviation,
8 but I understand nevertheless, you have an extensive
9 practical knowledge of flying and aircraft because of
10 your work. Could you just briefly tell us about that?

11 A. I have some knowledge of certain
12 aspects of aviation. I am not a pilot but through my
13 work on hazards to aircraft over more than 20 years I
14 have had a considerable association with various
15 aviation matters. Much of my work involved using air
16 traffic control and military air surveillance, radars
17 at the Department of Transport airports and various
18 military sites in Canada and elsewhere.

19 Of course I have some familiarity with
20 some aspects of aviation through, in other kinds of
21 work that I do and that our company does, not involved
22 in bird hazards to aircraft. We have occasion to
23 charter and fly in aircraft quite frequently over,
24 since 1980 or so, I have flown somewhat over 600 hours
25 in aircraft that I have chartered often flying in the



1 co-pilot's seat.

2 I also have an avocational interest in
3 some aspects of aviation and the history of aviation
4 and read various aviation publications. I am familiar
5 with certain aspects of aviation through that as well.

6 Q. I take it you are able to
7 distinguish between piston and turboprop types of
8 aircraft and that type of thing?

9 A. Yes.

10 Q. I think you told me you were
11 really an aviation enthusiast helping to fly aircraft
12 of various kinds?

13 A. That is true.

14 Q. If we could come to your report of
15 September 1987 which was marked as Exhibit M-390, the
16 green coloured one. I would like to look beginning at
17 the first page and the third page in which you discuss
18 how you came to be involved in this matter. Briefly,
19 could you tell us what you did in 1978 and what you did
20 in 1987. 1978 being work for the Region of Halton and
21 1987 and '86 for the Town of Milton. What you were
22 asked to do in each case?

23 A. In 1978 I was approached by M. M.
24 Dillon who were working on the planning of the then
25 proposed landfill site on behalf of the Region. I was



1 asked to evaluate and prepare a report concerning the
2 potential bird hazard to aircraft that would be created
3 if a landfill site were established at the then
4 proposed site, which is approximately in the area shown
5 as "E" on this map.

6 Q. Exhibit 274.

7 A. As part of that process I reviewed
8 some of the literature that then existed on bird
9 hazards to aircraft that was relevant to that
10 particular topic. I visited the Burlington Air Park
11 which is the same airport that we are talking about at
12 the present time which is located as shown here on
13 Exhibit 274.

14 Q. You have put some blue lines on
15 Exhibit H-274 which indicate what, the general location
16 of the runways?

17 A. That is the approximate location
18 of the runways as they exist now for Burlington Air
19 Park.

20 So I visited the Burlington Air Park and
21 spoke to the owner and also visited the Oakville
22 landfill site which was operating at that time but is
23 no longer operating and observed gulls coming to the
24 Oakville landfill site.

25 I prepared a report that outlined the



1 kinds of things that gulls do on a seasonal and daily
2 basis in this general area and evaluated the potential
3 bird hazard that would be created if a landfill site
4 were established within the proposed location.

5 In 1987 I was asked by the Town of
6 Milton to again review the potential bird hazard to
7 aircraft that would be created for aircraft using the
8 same Burlington Air Park if a landfill site were
9 established at Site D in the Town of Milton.

10 As part of that work, I again did a
11 somewhat less extensive review of the same literature
12 and the more recent literature. I visited again the
13 Burlington Air Park, spoke to its operator and prepared
14 a report that has many of the similar approaches and
15 objectives as the earlier report.

16 Q. Indeed, in your report, Exhibit
17 M-390, there is a fairly substantial appendix which
18 actually excerpts pages from the 1978 report?

19 A. That is correct. That appendix
20 includes sections on the behaviour of gulls in this
21 general area, some aspects of the bird hazard to
22 aircraft question and general information that is
23 equally applicable now as it was in 1978. There was no
24 particular reason to rewrite those materials.

25 Q. Milton appreciated that. That



1 appendix begins at page 23. You have identified
2 certain differences between the situation in 1978 and
3 that which exists today in respect of both birds and
4 the airport itself. At least those two things. Could
5 you tell us about those differences in the situation
6 then and now?

7 A. With respect to birds, the main
8 concern is that gulls will undoubtedly be attracted to
9 any landfill site that is established in the general
10 areas that we are talking about. Gulls are the general
11 type of birds which is widely recognized as being the
12 single most frequently struck group of birds in terms
13 of collisions between birds and aircraft.

14 The population of gulls in the general
15 lower Great Lakes area has been increasing very
16 rapidly. Something in the order of 11 per cent a year
17 over the last decade and there are far more gulls in
18 the western Lake Ontario, general western Lake Ontario
19 region now than there were in 1978.

20 If you wish I can give you some more
21 detailed figures on that.

22 More specifically, there is also now a
23 major gull colony in Hamilton Harbour, located only
24 about 20 kilometres from Site D. The location of that
25 new colony is just off this map down in the southeast



1 corner of Hamilton Harbour, and that is approximately
2 20 kilometres from there to Site D which is well within
3 the daily commuting range of gulls.

4 That colony, as of 1987, included the
5 Canadian Wild Life Services counts of the gulls there,
6 21,000 and some odd nests, 21,000 pairs of gulls. So in
7 the order of 42,000 adult gulls plus whatever number of
8 young gulls were produced from those nests.

9 Q. That colony, as I understand it,
10 did not exist in 1978?

11 A. That is correct.

12 Q. Then, in general terms, we are
13 going to hear from Mr. Kovachik, but can you tell us
14 about differences in the Air Park in 1978 and today
15 that are relevant to what you are looking at?

16 A. There are several such
17 differences. In 1978 the runways were not paved. At
18 present there is one paved runway. The longer of the
19 runways now is 2800 feet long which is longer than it
20 was in 1978 and therefore the Air Park is able to
21 service larger aircraft. There are more aircraft based
22 at Burlington Air Park now than there were in 1978.
23 Approximately, well, something over twice as many based
24 there as there were in 1978.

25 The types of aircraft that use



1 Burlington Air Park have also changed somewhat. In
2 1978 it was used almost exclusively by light single
3 engine, piston engined aircraft and now, that is still
4 a predominant type of aircraft there, but there are
5 also a small number of twin piston engined aircraft
6 there and occasionally single and twin turboprop
7 engined aircraft are at Burlington Air Park although my
8 understanding is that none are currently based at
9 Burlington Air Park.

10 Q. What is the significance of a
11 turboprop compared to a piston engined, I gather there
12 are really three basic categories?

13 A. In terms of relevance to bird
14 hazards to aircraft and many other things, there are
15 piston engined aircraft, there are turboprop aircraft
16 which also have a propeller like a piston engine
17 aircraft, but the engine is a gas turbine rather than a
18 piston engine. Then there are pure jet, for want of a
19 better term, aircraft which do not have a propeller on
20 the front, but operate through thrust alone.

21 The relevance of this here is that
22 the pure jet aircraft are the most susceptible to air
23 strikes. The turboprop aircraft are intermediate in
24 their susceptibility to bird strike and piston engines
25 are least susceptible of those three types to bird



1 strikes although even they can suffer damage.

2 Q. You have told us about the
3 certain differences in basic terms that exist between
4 the situation in 1978 and today. In terms of general
5 bird population on the Great Lakes, I thought I heard
6 you say that it had been estimated that it was
7 increasing at 11 per cent per year?

8 A. The population of ringed billed
9 gulls which are by far the predominant species of gull
10 on the lower Great Lakes, meaning Lake Ontario, that
11 population has increased by 11 per cent a year.

12 The other species of gull that we are
13 concerned with, the other species of gull that visits
14 landfill sites in this area is the herring gull which
15 is a larger bird. They do not nest in significant
16 numbers in this particular area. They nest north of
17 Lake Huron and beyond. They visit this area in large
18 numbers during the fall and winter and it is my
19 understanding the spring.

20 Q. In terms of looking at the next
21 20 years is there some trend that is in place with
22 regard to one of those species of birds as noted in the
23 last few years, the population increase?

24 A. Well, over the last decade the
25 ring billed gull population has been increasing at



1 approximately 11 per cent a year in this area based on
2 the surveys the Canada Wild Life Service has been doing
3 with some degree of intensity at some of the major
4 colonies.

5 Now, there have been, in the last three
6 years or so, some control measures implemented to try
7 to reduce the numbers or at least the rate of growth in
8 some of these ring billed gull colonies. Depending on
9 how those control measures may be continued into the
10 future, I think it is impossible to predict what the
11 rate of growth will be in the future but certain the
12 trend in numbers is still upward.

13 Q. I wonder if we could come, before
14 we get into more detail, come to what your conclusions
15 were in respect of the work you did in 1986-87. I think
16 if we look in your report at pages 18 and 19, you have
17 got enumerated a number and I would like to go over
18 these with you.

19 By the way we will be coming to this,
20 but in preparing to testify today, you did I
21 understand, review the testimony of Linda Hellas who
22 was called earlier by the Region?

23 A. I reviewed parts of her testimony
24 that dealt with birds and aircraft, yes.

25 Q. How did the numbers that you are



1 talking about in your first conclusion at Site D is
2 almost sure to attract large numbers of gulls. The
3 number of gulls you are talking about is hundreds and
4 occasionally thousands. Has this got anything to do
5 with where the landfill site is relative to the lake.
6 That is, if it was further from the lake would it be
7 less, or closer would it likely be more, a known
8 relationship?

9 A. Yes there is and that is correct
10 in a general way. My conclusion was that Site D is
11 almost sure to attract large numbers of gulls, hundreds
12 and occasionally over a thousand on a daily basis
13 during major parts of the year.

14 That is based on what has been observed
15 at other landfill sites in this general area at various
16 distances from the Lakeshore and including observations
17 that we made at quite a nearby location, the Oakville
18 landfill site that existed in 1978. When we looked at
19 it on a couple of occasions in the fall, went there and
20 counted 750 gulls on one day, and 900 I believe on
21 another day.

22 But, much more generally than that, we
23 have this large set of data from the Toronto area over
24 a 15-month period including counts for many landfill
25 sites in a widely varying range of distances from



1 shore. Even based on those counts from the last decade,
2 from the 1970's, this statement about hundreds and
3 occasionally over a thousand, is certainly well
4 supported.

5 If you then take into account the fact
6 that the overall gull population in the western Lake
7 Ontario area has increased considerably since then plus
8 the fact there is now a large gull colony quite close,
9 20 kilometres from the proposed site, then that would
10 reinforce ones confidence in those predictions. I
11 suggest they might even be conservative.

12 Q. By using the word conservative you
13 don't mean worst case?

14 A. That is correct. I mean the
15 numbers could be larger than implied by my statement of
16 hundreds and occasionally 1000.

17 Q. In terms of your knowledge of the
18 activity at the Burlington Air Park, what is the
19 relevance of peak numbers being expected in summer and
20 autumn in relation to peak use of the airport?

21 A. Well, I have been informed by the
22 Air Park operator that the amount of flying at the Air
23 Park tends to be higher, well is higher, in the summer
24 than in the winter and the peak numbers of gulls that
25 occur at landfill sites in this area occur in the



1 latter half of the summer and through much of the
2 autumn and therefore part of the period of peak gull
3 numbers will overlap, coincide with the period of peak
4 use of the Air Park.

5 Q. I think you have covered already
6 point No. 2 in your conclusions, is there anything you
7 wanted to add at this point? Do you want, have you an
8 overhead that shows that, perhaps your next point?

9 A. Right. There is a map in the
10 report which I will show a copy of in the overhead. The
11 map is on page 2 of the report that shows the location
12 of Site D in relation to Burlington Air Park and the
13 lakefront. I will just put that same map up here as an
14 overhead.

15 The top half of this map is of really no
16 particular concern to us here. So, there is Site D.
17 There is Burlington Air Park and the ring billed gull
18 colony at Hamilton Harbour is down in this area here
19 off the very southwest corner of the map. That distance
20 from the colony to Site D is approximately 20
21 kilometres.

22 Now, during the time when gulls are
23 actually nesting at the colony, that is the onetime of
24 year when very few if any will come inland to the Air
25 Park or to the landfill site. Gulls tend to feed around



1 their colonies on the water during the time of year
2 when they are nesting in late spring and early summer.

3
4 However, once the adults no longer have
5 to care for their young at the colony they start to
6 spread out from the colony. There still will be a
7 focus of peak numbers of gulls in that general area
8 around the colony. They will gradually expand their
9 use of other water areas along the waterfront from the
10 colony in the midsummer period, after the young have
11 left the colony and the adults are no longer going to
12 care for them in the colony.

13 At that time in July, the gulls will
14 start to come inland to landfill sites. This distance
15 from the Hamilton Harbour or the Lake Ontario
16 waterfront east of Hamilton Harbour inland to Site D,
17 is very much within the normal commuting distance of
18 gulls. What they will do is to spend the night on the
19 water on Lake Ontario and fly inland to feeding
20 locations, particularly landfill sites, in the morning.
21 They will spend much of the day either at the landfill
22 site or in other nearby areas moving back and forth
23 between the areas where they can get food at the
24 landfill site or household garbage, and other areas
25 where they will sit and rest. They move back and



1 forth between the landfill site and the fields around
2 it or parts of the landfill site that are not actually
3 being used for landfilling. . Then late in the day they
4 will commute back to the waterfront, again from the
5 landfill site.

6 I have got an overlay here that very
7 diagrammatically suggests how this might work. I have
8 shown a particularly intense corridor here from
9 Hamilton Harbour up to the landfill site because we do
10 expect, particularly shortly after the gulls have
11 finished nesting at the colony that that will be the
12 peak area of concentration of the gulls.

13 I have also shown a variety of lines
14 converging on the landfill site from other places along
15 the waterfront because gulls will have spread out all
16 along the water and in fact gulls from other colonies,
17 including the colonies in the Toronto area and
18 elsewhere in Southern Ontario, will gradually move into
19 this area as the summer goes on and will start to visit
20 landfill sites in this area.

21 Q. Dr. Richardson your shoulder is
22 blocking a portion of the overlay.

23 MR. LANCASTER: Perhaps we could mark the
24 overlay as Exhibit M-393.

25 ---EXHIBIT NO. M-393: Overlay



1 MR. ESTRIN: Q. Does this diagram which
2 has been marked as Exhibit M-393 relate to point No. 3
3 in your conclusions?

4 A. Yes, it does. As you can see from
5 the overlay the straight line route from the western
6 most part of Lake Ontario, namely Hamilton Harbour,
7 passes close to but not directly over Burlington Air
8 Park. There is Burlington Air Park and the western most
9 of the straight lines there passes within about a
10 kilometre of the end of the runway, the runways at
11 Burlington Air Park.

12 Now, there are several points that need
13 to be made about that. One of them is that this is very
14 much a diagrammatic indication of the paths of gulls.
15 They don't all fly in perfect straight lines by any
16 means. There will be some number of gulls who are
17 wandering to the west and northwest of this most
18 westerly line that I have drawn on this map.

19 So, undoubtedly some gulls would come
20 over Burlington Air Park, but the predominant pathways
21 would be somewhat to the east of Burlington Air Park.
22 Another point that needs to be made is that as aircraft
23 take off from Burlington Air Park towards the southeast
24 if that is the direction they are taking off or
25 conversely landing towards the northwest coming in from



1 the southeast, they will of course intersect the
2 western portion of that corridor that is marked on the
3 overlay.

4 Q. Perhaps it would be helpful to
5 just refer back to the diagram in your report opposite
6 page 7 where we see a copy of the Canada Flight
7 Supplement which shows the two runways. You also at
8 this point could tell us a bit about the circuits and
9 the right-hand turn, how they may relate to this.

10 A. All right. As I indicated earlier
11 there are two runways at Burlington Air Park, the
12 longer and the paved one of the two is the one if you
13 are looking on page 6 of the report, the one shown as
14 the 2800 foot runway oriented from northwest to
15 southeast. Specifically 1432 or 140 degrees and 320
16 degrees, depending on which way you are going on the
17 runway. The shorter of the two runways which is not
18 paved is 2300 feet long and it is oriented east west.

19 Now, I will see how the best way to
20 handle this is. I am going to put up a different map as
21 an overlay. Well, I think it is probably best to stay
22 with the one we have got. I am going to turn this map
23 so that north is now at the top. It was in fact not at
24 the top before. So there is the north area up there as
25 you can see. So, this is the east-west runway here and



1 this is the longer northwest, southeast runway here.

2 Let us take the example of an aircraft
3 using; taking off towards the southeast. So, it will be
4 taking off on the longer of the two runways here and it
5 will of course head out climbing in this direction. The
6 normal procedure for an aircraft that is leaving an
7 airport, particularly if it is in fact just going to do
8 training flights in the area around the airport, is to
9 fly what is known as left-hand circuits, so that he
10 makes a series of left-hand turns which ultimately
11 bring him back to the airport.

12 So, after going and climbing, going
13 something in the order of approximately a mile the
14 aircraft would turn to the left 90 degrees and head out
15 in this direction and would go, again something in the
16 order of a mile, and this is certainly a variable
17 distance, before making another left-hand turn on to a
18 course parallel to the runway, but in the opposite
19 direction. In this case it would be going downwind
20 because of course the aircraft takes off upwind.

21 MR. LEDERER: I am sorry, in the absence
22 of Mr. Estrin I can't see what you are doing because
23 of your shoulder.

24 MR. ESTRIN: Can the Board see it?

25 THE WITNESS: Sorry. So, an aircraft is



1 now making a second left-hand turn and is going
2 parallel to the runway in the opposite direction. It is
3 now going to come around and land. It will make
4 another left-hand turn approximately this distance and
5 a final left-hand turn on to what is known as the final
6 approach path here.

7 Now, if the aircraft, if the wind was
8 from the opposite direction, the wind was from the
9 northwest, the aircraft would therefore take off upwind
10 from the northwest on the same runway in the opposite
11 direction. Normally you would expect the aircraft to
12 take off in this direction and then make a left-hand
13 turn after going, after climbing and going about a mile
14 or so beyond the end of the runway.

15 In fact, the Burlington Air Park, the
16 published normal circuit for aircraft taking off to the
17 northwest is contrary to the normal practice and in
18 fact is to make a right-hand turn to therefore make a
19 series of right hand turns around the circuit and it
20 would follow the same path we have already outlined in
21 the opposite direction. Take off to the northwest, make
22 another right-hand turn, another right-hand turn a
23 third right-hand turn and the final approach would be
24 to the northwest.

25 I understand one of the reasons for this



1 is the fact that there is high ground, namely,
2 Rattlesnake Point which is part of the Niagara
3 Escarpment about 5 kilometres up in this direction
4 about here.

5 There is also high ground over to the
6 southwest over here only about 3 kilometres away.
7 Another part of the Niagara Escarpment. Later
8 witnesses can give you more details about this but that
9 is at least part of the reason why the circuit for
10 aircraft taking off to the northwest is in fact
11 contrary to the normal practice, and is a right-hand
12 circuit rather than a left-hand circuit.

13 Similarly for the other runway I will
14 switch to a different colour here, and it will be
15 easier. For the east-west runway, this shorter one
16 which is here, the normal practice for aircraft taking
17 off to the east is to take off, it brings them in to
18 the corridor of the birds if the landfill site is
19 established at Site D and then make a left-hand turn,
20 another left-hand turn, another left-hand turn and then
21 final approach, like so.

22 That is the normal left-hand circuit and
23 that is what is used. For aircraft going the opposite
24 direction, if there is a west wind, a wind from the
25 west, taking off to the west on that same runway, the



1 non-standard right-hand circuit is again applied on
2 that western take-off runway, so that they make a
3 right-hand turn rather than the normal left-hand turn
4 and go the opposite direction around this line I have
5 already shown here.

6 So, the point of all this is that
7 regardless of which of the four runways, each
8 direction, or each of the two runways the aircraft use
9 at Burlington Air Park, the normal circuit pattern for
10 Burlington Air Park will be a long one or the other of
11 these two lines that I have drawn in.

12 So, regardless of what runway is in use
13 and what direction the aircraft are flying, landing or
14 taking off on that runway, part of the circuit is going
15 to be into that anticipated corridor of gulls flying
16 between Hamilton Harbour and Site D; if a landfill site
17 is established at Site D.

18 Q. I wonder, Mr. Chairman, if we
19 could mark, perhaps mark the overhead that he has
20 marked as an exhibit and we will make copies with those
21 lines that he has drawn on it.

22 MR. LANCASTER: Probably we can call
23 that M-393-A.

24 ---EXHIBIT NO. M-393-A: Amended overlay

25 MR. ESTRIN: Exhibit M-393-A has the two



1 rectangles on it, one blue and one purple, at least in
2 the original overlay version, those are the colours.

3 Q. Those are the approximate
4 circuits?

5 A. That is correct. Again a later
6 witness, the airport operator can perhaps give you some
7 more specific details. It should be pointed out that
8 the circuit is not a predefined pattern that is laid
9 out on the ground that the aircraft follows precisely.
10 It is a general flight pattern around a set of runways.

11 How far the aircraft travel before making, in a
12 particular direction, before making a turn is somewhat
13 variable. This is a generalization of a typical scale
14 of circuits.

15 Q. Now, in relation to collisions
16 between aircraft and gulls, Dr. Richardson, is it --
17 there are statistics that have been compiled at various
18 airports across Canada. I only wish to ask you in
19 relation to this point No. 3 that we are discussing,
20 one aspect of the statistics.

21 I understand that a significant number
22 of those gull aircraft collisions happen in a certain
23 mode of the aircraft activity. Could you tell us about
24 that and how that relates to point No. 3?

25 A. The great majority of collisions



1 with gulls and with other birds in fact by civil
2 aircraft occur either on or very close to airports and
3 the primary reason for this is that the normal
4 operational altitudes for certainly the airliners and
5 even most other aircraft are high enough to be above
6 the area where most birds are flying and therefore it
7 is primarily while the aircraft are landing or taking
8 off that they are low enough to the ground to be in the
9 area where they will be likely to intersect a
10 significant number of birds.

11 The altitude at which this generally
12 happens, generally, for statistical purposes, it is
13 broken down between zero and 500 feet and above.

14 Q. Is there something significant
15 about the range between takeoff and 500 feet?

16 MR. LEDERER: Excuse me, Mr. Chairman.
17 with respect. I appreciate that Boards of this type
18 take great latitude with the type of questions that are
19 asked. Mr. Estrin's last question was, there are kinds
20 of statistics out there. I don't know want to talk
21 about statistics. I understand those things happen in a
22 certain mode. Can you tell me about the mode. That has
23 got to be a leading question. You have introduced
24 statistics which the witness hasn't brought you at all,
25 then there is the idea that there is some specific



1 mode. Surely that idea has to come from the witness
2 and this question really leads us in precisely the same
3 way.

4 I understand that there are these
5 levels, tell us about it. With the greatest of respect
6 and understanding that the Board grants latitude and
7 not wanting in any way to restrict Mr. Estrin to make
8 this longer and make it more complicated, at some point
9 we go too far. It is the witness we want to hear from.
10 Let the witness introduce us to these concepts, not Mr.
11 Estrin please.

12 MR. LANCASTER: Reword your question,
13 Mr. Estrin, please.

14 MR. ESTRIN: If I have gone too far I
15 apologize. I am simply trying to keep it as short as I
16 reasonably can. All of this material is fully
17 articulated already in the documents that have been
18 filed, but to the extent that we have to go into
19 further detail I will do my best.

20 Q. Could you refer on this point,
21 Dr. Richardson, to Exhibit M-389, the witness
22 statement and if you look at paragraph No. 2, which
23 starts out as Appendix 1 to this witness statement,
24 statistics with respect to bird strikes at three
25 Ontario airports. Without referring to that appendix



1 for a moment, you have summarized statistics for three
2 airports taken from federal statistics. Is that
3 correct?

4 A. That is correct.

5 Q. Then you have indicated in your
6 witness statement, paragraph 2, that the statistics for
7 those three airports, Toronto Island, North Bay and
8 Trenton as well as other statistics and then you have
9 indicated some general conclusions. I would like to
10 discuss, I think you have told us about the first one
11 at the bottom of that page, that gulls account for a
12 larger proportion of bird strikes to civil aircraft
13 than any other single group. This is the next point at
14 the top of page 2 I would like you to discuss.

15 A. Well, it is indicated there and
16 also conclusion 3 of my report which we have been
17 talking about previously I pointed out that most of the
18 gulls that are travelling between roosting areas on
19 water and landfill sites or the reverse from a landfill
20 site to the roosting area, will be flying at an
21 altitude less than 500 feet. Occasionally there will be
22 some gulls at higher altitudes, but the great majority
23 will be under an altitude of 500 feet.

24 Of course, aircraft are normally, civil
25 aircraft are normally below 500 feet only during the



1 period when they are in the very early stages of their
2 climb out from an airport or conversely on their final
3 approach to the airport.

4 Q. And if we then could is there
5 anything else in relation to point No. 3 which you
6 wish to elaborate on?

7 A. Well, as I just alluded to, there
8 are some birds, some gulls, that will occur above 500
9 feet, a low percentage of the total while they are on
10 route between the roosting area and the landfill sites,
11 or the opposite.

12 So, this means that there is some
13 probability of an aircraft encountering gulls even
14 after the aircraft has climbed above 500 feet. That
15 probability is lower than when the aircraft is below
16 500 feet.

17 Q. You mention other birds also
18 likely to be attracted to the landfill site. Is there
19 anything you should add on that point here?

20 A. We know from observations at many
21 landfill sites in this area that gulls are the
22 predominant group of birds that are attracted to the
23 food scraps that are available at a sanitary landfill.

24 However, there can be flocks of crows,
25 of various members of the blackbird group and of



1 starlings and pigeons. All of those types of birds can
2 indeed constitute a hazard to aircraft. So, it should
3 not be discounted, but the numbers of them and their
4 flight altitudes which are usually fairly low, tending
5 to be somewhat lower than the gulls, make the gulls the
6 primary concern.

7 Q. The next conclusions to deal with
8 are here 5 and 6. They seem to relate to each other.
9 Perhaps you could discuss those points?

10 A. Well, those conclusions deal with
11 the question of bird collisions with small, generally
12 single engined piston engined powered aircraft which
13 are the predominant, but not the only types of aircraft
14 that presently use Burlington Air Park.

15 The faster an aircraft goes, not
16 surprisingly, the less likelihood that the gull is
17 going to, or another bird is going to see it and get
18 out of its way in time to avoid the collision.
19 Conversely, the faster the aircraft goes the less
20 chance the pilot is going to see the gull sufficiently
21 long in advance to be able to manoeuvre and avoid the
22 gull.

23 So, light aircraft which are generally
24 fairly slow flying aircraft for that reason are
25 somewhat less likely to encounter or collide with birds



1 than the faster aircraft. A related point is that the
2 faster the aircraft is going when it collides with the
3 bird, the greater the amount of damage that is likely
4 to be done and it is not a linear function by any
5 means. It has variously been estimated at least a
6 square function of the speed and possibly more than a
7 square function of the speed. That is the amount of
8 damage that is done in relation to the relative speeds
9 of the bird and the aircraft at impact.

10 The point of that is that for aircraft
11 that are slow flying aircraft you expect to generally
12 find on the average less likelihood of serious damage
13 if a collision does occur as well as a lower
14 probability that a collision would occur.

15 A further point is that piston engines
16 are considerably more resistant to strikes with foreign
17 objects, including birds, than are turbine engines that
18 have large numbers of precisely machined, extremely
19 rapidly moving parts that are often exposed directly
20 behind the air intake, such that a bird can go straight
21 into the turbine engine. You don't have that situation
22 with the piston power engine, and therefore the
23 probability of a bird actually damaging the engine to
24 the point that the engine's power output is reduced or
25 the engine ceases to function altogether is lower for



1 piston powered aircraft than it is for the turbine
2 powered aircraft.

3 All those things lead to the point that
4 the probability of collisions and the probability of
5 serious damage if there is a collision are lower for
6 the types of aircraft that are the predominant types of
7 aircraft using Burlington Air Park. Despite all this,
8 collisions do occur between light piston powered
9 aircraft and gulls and other birds. Damage does
10 sometimes occur as a result of those collisions, and
11 there in fact have been cases of light piston powered
12 aircraft crashing as a result of collisions with birds,
13 including gulls.

14 There have been a small number of human
15 fatalities as a result of such crashes.

16 Q. While we are on this point,
17 earlier in the report which we haven't dealt with you
18 mention that in addition to the propeller driven
19 aircraft, there is also a gliding training activity at
20 Burlington Air Park. Can you tell us briefly about that
21 and relate that to generally the topic of collision
22 with birds?

23 A. As I mentioned, in the report, the
24 air cadets conduct gliding operations at Burlington Air
25 Park, out of Burlington Air Park each year,



1 predominantly in the late spring, early summer and in
2 the late summer.

3 This involves a small piston powered
4 aircraft towing an unpowered glider up to an altitude
5 of something in the order of 2500 feet and then
6 releasing the glider within a few kilometres of the
7 Burlington Air Park and the glider then proceeds back
8 to Burlington Air Park for a landing. The concern there
9 is that, of course, the tow plane while it is taking
10 off is more heavily loaded than it normally would be if
11 it was not towing this glider behind it, and therefore
12 its manoeuvrability is reduced. Its margins are
13 reduced and if something does happen like a collision
14 with a bird, then there is expected to be an enhanced
15 risk associated with that type of operation as opposed
16 to just any regular take-off of an aircraft.

17 Because the pilots of the glider, well,
18 the glider is another consideration of course, it is
19 unpowered and therefore has certain limitations on its
20 actions as well, and furthermore it is generally
21 piloted by an individual who may not have much
22 experience in flying and therefore is perhaps more
23 likely to run into difficulties of control or otherwise
24 if he does encounter an unusual situation like running
25 into a bird.



1 Q. As we know, we will be hearing
2 from Mr. Kovachik, but in addition to whatever uses
3 are made of the single engined or turboprop planes that
4 you have mentioned at Burlington Air Park, there is
5 also a flying school there. Is that correct?

6 A. There is indeed a flying school.
7 Some of the things I have just said about gliders also
8 pertain there. Particularly the fact that it involves
9 relatively inexperienced pilots and of course someone
10 with less experience is particularly likely to run into
11 more difficulties if a certain untoward event occurs,
12 like running into a bird than if a more experienced
13 pilot does.

14 Q. In paragraph --let me put this to
15 you. What is your position with respect to the
16 suggestion that because there are presently no jet
17 planes using Burlington Air Park we are not dealing
18 with a very serious hazard situation?

19 A. Well, I have already mentioned
20 that there are in fact turboprop powered aircraft in
21 small numbers using the Air Park at this time. They are
22 considerably more susceptible to strikes with birds.
23 Their engines are more susceptible to strikes with
24 birds than on a piston aircraft. We already have in
25 comparison with 1978 when there was essentially no



1 turboprop activity at this location, we also have that
2 increase in risk from when we reviewed this situation
3 in 1978 and 1979.

4 If a landfill site is established at
5 Site D it is expected to operate for something in the
6 order of 20 years. I have no personal knowledge of what
7 the plans of that Burlington Air Park are over the next
8 20 years, but in any of these kinds of exercises it is
9 important to take account of not only the present
10 situation but what may happen over the lifetime of the
11 operation.

12 Certainly if Burlington Air Park
13 continues to expand as it has for the last few
14 years, possibly jet aircraft, small jet aircraft like a
15 business jet might be accommodated in the future. Turbo
16 jet engines in general, as I have described, are
17 considerably more susceptible to bird strikes than the
18 other kinds of engines and small business jets in
19 particular, their engines are extremely susceptible to
20 bird strikes and there have been a considerable number
21 of business jets that have crashed as a result of
22 running into birds, including several crashes of
23 business jets after running into gulls with fatalities
24 of people in the aircraft and also on the ground, in a
25 couple of cases.



1 Q. Now, I think that probably brings
2 us to point 9 where you refer to Transport Canada
3 guidelines about the location of a landfill site in
4 relation to an airport. The Board has already filed
5 with it as exhibits, some of those guidelines. I have
6 an exhibit number. I think there were several filed.

7 Can you comment as to how a separation
8 distance which is 5 miles or 8 kilometres, how you
9 understand it was arrived at and its basic purpose in
10 terms of trying to mitigate or prevent those kinds of
11 hazards arising?

12 MR. LEDERER: With respect, Mr. Estrin
13 has referred to Tab 4 of Mr. Richardson's witness
14 statement. That is where you are going to find these
15 guidelines, it is actually at Tab 6 of Mr. McDonald's
16 witness statement.

17 MR. ESTRIN: I would be happy to have
18 reference to it if you wish. Perhaps everyone has a
19 copy of Mr. McDonald's witness statement. If I could,
20 perhaps maybe we could file that now. He will be coming
21 shortly.

22 MR. LANCASTER: Exhibit M-394.

23 ---EXHIBIT NO. M-394: Witness statement of Mr. McDonald

24 MR. ESTRIN: It is in one of these
25 documents, a shorter version I believe of one that the



1 Board has seen already is found at Tab 7, the fourth
2 page in. Also it is headed page 24 at the top and
3 heading part 3, "Bird Hazards" and I believe this page
4 at least has been marked as a previous exhibit.

5 It is there that Transport Canada talks
6 about not recommending certain land use practices for
7 areas 5 miles or less from the airport boundary.

8 Q. I suppose I should ask you since
9 this is particularly your area of expertise. This says
10 under the heading A, extremely hazardous land use
11 practices:

12 "The following land use practices are
13 extremely attractive to bird species
14 that are:

15 (i) a high hazard to aircraft because
16 of the larger size, behavioral
17 characteristics (flopping, soaring) and
18 their preference for airport
19 environments. . . "

20 And stopping there and if you like including the next
21 one:

22 ". . . far ranging in their daily food
23 searching activities. "

24 Does that description apply to gulls?

25 A. Yes, it does. That same page by



1 the way appears in my report, your Exhibit 390 at page
2 42. I included it as an appendix there. More
3 generally, it is widely recognized among all bird
4 hazard to aircraft specialists, that landfill sites
5 attract birds, particularly gulls and that they are one
6 of the, if not the single most serious problem with
7 respect to attracting birds into a particular area, and
8 it is widely recognized and written in many places and
9 summarized in my report, that one of the worst things
10 that you can do is to arrange a situation where an
11 airport is located somewhere between, more or less
12 between a place where gulls roost at night on the water
13 and where gulls are attracted for food, like a landfill
14 site.

15 This is basically the situation that we
16 have if a landfill is established at Site D with the
17 Air Park not quite on the direct route, but very close
18 to it, between the gull concentration area where they
19 roost and the proposed landfill site. So, it is
20 unanimously agreed among bird hazard people that that
21 is a situation to be avoided.

22 Now, various agencies, regulatory
23 agencies have established guidelines of various types
24 for stating their policies and what you should do in
25 terms of keeping landfill sites and various other



1 things that attract birds away from airports. Transport
2 Canada's version of those guidelines says that, as you
3 can see on that page, included as page 42 of my report
4 that is in Appendix 7 to Mr. McDonald's witness
5 statement, they list as extremely hazardous land use
6 practices only two types of land uses, food waste
7 landfill sites and coastal commercial fish plants.

8 Then they have a variety of others that
9 are listed as being less hazardous, but those are the
10 two that they categorize as the most hazardous. They
11 say that those types of activities should not be
12 allowed within 5 miles or 8 kilometres, 5 statute miles
13 or 8 kilometres of an airport. They don't make any
14 particular distinction as to what direction or where
15 the airport and the landfill site are in relation to
16 the water that the gulls might be coming from.

17 There are other guidelines that have
18 been possibly put forward by other agencies in the
19 United States or the International Civil Aviation
20 Organization. They have other variations on this
21 arrangement, but they all say that we should keep
22 landfill sites some distance away from airports.

23 Q. So that these guidelines that you
24 have referred to and talk about simply as a separation
25 distance, but in addition to that you have just



1 mentioned there is this other siting guideline that you
2 say is unanimously agreed?

3 A. Among bird hazard to aircraft
4 specialists, it is very widely accepted that one of the
5 worst situations that you can create for bird hazards
6 to aircraft problem is to put a landfill site on the
7 inland side of an airport.

8 Q. Now, let us come to --well, you
9 say in paragraph 9 of your conclusions:

10 "If a landfill site must be located
11 within 8 kilometres of Burlington Air
12 Park the bird hazard would be least if
13 the landfill were to the south or
14 southwest rather than the north or
15 northeast. "

16 It also says:

17 "The hazard would also be reduced if
18 landfill operations could be conducted
19 at night rather than by day."

20 Has it actually happened somewhere?

21 A. It actually has although it is a
22 very rare event because it is difficult and costly to
23 arrange. Some biological background for this is that
24 gulls feed at inland sites like landfill sites during
25 the daytime only and almost always retire to some water



1 things that attract birds away from airports. Transport
2 Canada's version of those guidelines says that, as you
3 can see on that page, included as page 42 of my report
4 that is in Appendix 7 to Mr. McDonald's witness
5 statement, they list as extremely hazardous land use
6 practices only two types of land uses, food waste
7 landfill sites and coastal commercial fish plants.

8 Then they have a variety of others that
9 are listed as being less hazardous, but those are the
10 two that they categorize as the most hazardous. They
11 say that those types of activities should not be
12 allowed within 5 miles or 8 kilometres, 5 statute miles
13 or 8 kilometres of an airport. They don't make any
14 particular distinction as to what direction or where
15 the airport and the landfill site are in relation to
16 the water that the gulls might be coming from.

17 There are other guidelines that have
18 been possibly put forward by other agencies in the
19 United States or the International Civil Aviation
20 Organization. They have other variations on this
21 arrangement, but they all say that we should keep
22 landfill sites some distance away from airports.

23 Q. So that these guidelines that you
24 have referred to and talk about simply as a separation
25 distance, but in addition to that you have just



1 mentioned there is this other siting guideline that you
2 say is unanimously agreed?

3 A. Among bird hazard to aircraft
4 specialists, it is very widely accepted that one of the
5 worst situations that you can create for bird hazards
6 to aircraft problem is to put a landfill site on the
7 inland side of an airport.

8 Q. Now, let us come to --well, you
9 say in paragraph 9 of your conclusions:

10 "If a landfill site must be located
11 within 8 kilometres of Burlington Air
12 Park the bird hazard would be least if
13 the landfill were to the south or
14 southwest rather than the north or
15 northeast. "

16 It also says:

17 "The hazard would also be reduced if
18 landfill operations could be conducted
19 at night rather than by day."

20 Has it actually happened somewhere?

21 A. It actually has although it is a
22 very rare event because it is difficult and costly to
23 arrange. Some biological background for this is that
24 gulls feed at inland sites like landfill sites during
25 the daytime only and almost always retire to some water



1 body in the area to roost for the night.

2 So, if you can arrange that the food
3 waste that would otherwise attract gulls or other
4 birds, is brought to the landfill site in the night,
5 then entirely covered by clean fill by morning when
6 gulls might normally start to move about then of course
7 there is no food available to the gulls during the day
8 time and they will not find the landfill site to be an
9 attractive location.

10 I know that this procedure was in fact
11 adopted in Australia in one location many years ago
12 where gulls were a particularly serious problem and it
13 proved to be an effective solution, but it obviously
14 causes major operational problems to arrange to bring
15 the garbage to a landfill site only at night.

16 Q. Turning to paragraph 10 and
17 perhaps we can just cover that point before we take a
18 break. You say if the plan for D is approved there are
19 several measures that could be taken to reduce the bird
20 hazards. I am going to ask for more details about those
21 later on, but could you just deal with that point in a
22 summary way as you have in paragraph 10 for the moment?

23 A. Well, as I have indicated
24 previously, bird hazard to aircraft specialists agree
25 that by far the best thing to do is not have a landfill



1 site near an airport, particularly on the inland side
2 of an airport. If for whatever reason you have to have
3 an landfill site in that situation then in order to,
4 that landfill site will attract birds and gulls if it
5 is near a water body like this one would be.

6 Those gulls will cause, without
7 question, an increased hazard to aircraft. Therefore,
8 it is desirable to try and find in that situation some
9 way of reducing the number of gulls that would come to
10 that landfill site. There are a wide variety of scaring
11 and habitat control type techniques that have been used
12 in the various situations to try and keep gulls and
13 other birds away from airports, away from landfill
14 sites, away from various places for whatever reason
15 people don't want birds to be attracted.

16 All of these techniques are fallible in
17 one way or another and only partly successful in
18 controlling birds. I should say almost all of these
19 techniques have those problems. The more
20 straightforward approach is simply not to put the
21 landfill site in that situation if there is any way to
22 avoid it.

23 Q. Perhaps, lastly, in terms of
24 conclusions that you have reached I believe in your
25 witness statement at page 16, there is another



1 conclusion that you have reached that would be added in
2 effect to this list contained in your report.

3 Would you review paragraph 8 of your
4 witness statement for us.

5 A. Right. Did you wish me to read
6 that out?

7 Q. No, I simply wanted to ask you,
8 have you reached the conclusions stated in paragraph 8
9 of your witness statement based on everything that you
10 have researched about this site and having reviewed the
11 transcript and the exhibits previously filed?

12 A. From the perspective of bird
13 hazards to aircraft certainly Site F in Burlington does
14 not have the bird would not create the bird hazard
15 problems that Site D would create.

16 MR. ESTRIN: Perhaps if this would be a
17 convenient time to take the morning break, we could do
18 that?

19 MR. LANCASTER: We are close enough.
20 Fifteen minutes.

21 ---Recess

22 MR. LANCASTER: Thank you, please be
23 seated.

24 MR. ESTRIN: Q. Dr. Richardson, I
25 believe you prepared an overhead schematic illustrating



1 the daily commuting cycle of gulls?

2 A. Yes, what this does is just show a
3 diagrammatic representation of things that I was
4 talking about previously. The title that is up on the
5 ceiling there says it is the daily commuting cycle of
6 gulls except during the breeding season and active
7 migration. This is during much of the year but not
8 during those particular activities.

9 The gulls, almost all of the gulls,
10 spend the night roosting, as we call it, on water.
11 Generally on Lake Ontario in this area, although a
12 small number will roost on some other small interior
13 lakes. The majority of the gulls commute to inland
14 feeding locations, landfills, fields, whatever on a
15 daily basis and travel from their aquatic roosting
16 area, primarily during the morning, usually the first
17 half of the morning to the interior feeding locations
18 and return to the roosting area in general in the
19 latter half of the afternoon.

20 Now, they don't spend their whole day
21 feeding by any means. They spend only a fraction, quite
22 a small fraction of the day actively feeding. During
23 the other part of the day they will go on to, for want
24 of a better term, loaf. This means either sit around at
25 a feeding area itself or at some other nearby location



1 and they prefer for loafing, flat areas where they can
2 see a long distance and see predators coming. They also
3 tend to prefer areas that have pools and standing water
4 that they can use for bathing. That is not an essential
5 element but if water is available it will tend to
6 increase the chances that the birds would loaf, gulls
7 would loaf at those locations.

8 So, gulls may commute back and forth
9 between the loafing and the feeding area a number of
10 times.

11 Q. How would a facility like an Air
12 Park be classified in terms of an area that would or
13 would not be attractive as a loafing area for gulls?

14 A. Airports in general are places
15 where gulls will loaf because they are large open areas
16 where the gull can see a long distance. Sometimes they
17 have standing water, although that is discouraged for
18 this particular reason, controlling bird hazards. So,
19 if you do have an airport within a few kilometres of a
20 good feeding location like a landfill site then it
21 certainly will increase, the presence of the landfill
22 site will increase the chances, increase the frequency
23 of gulls loafing on the Air Park.

24 MR. LANCASTER: I will mark that as
25 Exhibit M-385.



1 MR. ESTRIN: Thank you, that is a copy of
2 the overhead, daily commuting cycle of gulls.

3 ---EXHIBIT NO. M-395: "Daily commuting cycle
4 of gulls"

5 MR. ESTRIN: Q. I believe you also have
6 prepared another overhead indicating weekly
7 fluctuations in the number of gulls in a 1972-73 study
8 which you wanted to show us, similar I understand to
9 something which is already in the report?

10 A. That is correct. In the appendix
11 to my report there is a graph that looks very similar
12 to this. I can give you a page reference here, page 26
13 of my report, Exhibit M-390. Both of these diagrams
14 come from a study our company conducted in the Toronto
15 area in 1973 and show numbers of gulls in that area as
16 a function of date over the 15 or 16 month period over
17 which we were conducting that study. The diagram which
18 is in the back of the report, page 26, shows total
19 number of gulls at all the locations we were assessing
20 in the Toronto area over that period.

21 The diagram we have got here as an
22 overhead represents on the top half the number of gulls
23 at locations 2 to 8 miles inland. The total number of
24 gulls at a series of locations, 2 to 8 miles inland in
25 the general Brampton to Oshawa area. The lower diagram
represents numbers of gulls further inland within that



1 | general region.

2 The reason I show this particular one
3 that is on the overhead projection, is that the 2 to 8
4 mile inland category is more or less characteristic of
5 what we would expect at a landfill site, the distance
6 inland of Site D. What we see on the graph is the
7 fluctuation in total number of gulls, which is the top
8 line, the dotted line. The total numbers of ring
9 billed gulls which is this dashed line here and the
10 solid line as the total numbers of herring gulls in the
11 15 month period.

12 The most notable features of this graph
13 are the fact that during the breeding season
14 essentially no gulls come in land to landfill sites.
15 that is the only time of year when gulls do not come
16 inland to landfill sites.

17 Starting in July is a very abrupt
18 increase in the number of gulls coming inland. That
19 peak extends through until very late autumn until
20 December. You can see the peak here in 1973 going from
21 late July through to it was dropping off at the end of
22 the study in December and in 1972 similarly you can see
23 a peak that dropped off in November and December.

24 MR. LANCASTER: That will be M-396.

25	<u>---EXHIBIT M-396:</u>	Weekly Fluctuation in the number of gulls
----	--------------------------	---



1 THE WITNESS: I should point out the
2 purpose of this diagram is to give you an indication in
3 the seasonal variation in the number of gulls coming
4 inland to a landfill site. The absolute numbers are not
5 particularly meaningful here because this is a total
6 value for a different series of landfill sites which
7 were at this range of distances inland.

8 The absolute numbers are not
9 particularly relevant because these numbers come from
10 1972 and 1973 when the total number of gulls in the
11 western Ontario region was much less than it currently
12 is.

13 DR. KINGHAM: Can you just clarify the
14 point. You said measured at a number of landfill
15 sites. So, these lines are for landfill sites?

16 THE WITNESS: Primarily landfill sites. I
17 can show you a map of the various sites that have been
18 used in this compilation.

19 DR. KINGHAM: I just wanted to
20 understand it is landfill sites that you are making
21 reference to.

22 THE WITNESS: There are one or two other
23 inland locations that attracted gulls that are included
24 on this graph but the great majority of those sites are
25 landfill sites.



1 MR. ESTRIN:Q. Perhaps it would be time
2 to refer to an overhead which indicates, I believe,
3 areas surveyed that led to some of this information?

4 A. Yes, I can show that. This is a
5 map of the area that was involved in this study in 1972
6 and 1973 and includes the sites that we have been
7 talking about.

8 MR. LANCASTER: Exhibit M-397.

9 ---EXHIBIT NO. M-397: Gull site data and map

10 MR. ESTRIN: Q. Looking at M-397, what
11 do the arrows there indicate?

12 A. The arrows on this map indicate
13 the primary flight lines of gulls that we identified
14 during that study which extended from approximately
15 Brampton here on this side to Oshawa on the far side,
16 as I look at it. The solid circles that have purple
17 rings around them are landfill sites that were active
18 at that time and the open circles, such as this one
19 down here which is labelled No. 12 and this one up
20 here, are places where a particular concentration of
21 gulls were roosting on the water at night.

22 So, these arrows show the predominant
23 routes of gulls between their nighttime roosts on water
24 and their daytime concentration points which as you can
25 see were primarily landfill sites that are circled.



1 Q. There is something, you mentioned
2 briefly I think the phenomenon called soaring in
3 relation to gulls activity. Could you perhaps tell us a
4 bit about that?

5 A. Yes, as I described earlier, while
6 gulls are travelling between roosting sites and the
7 landfill sites or other interior location, the great
8 majority of them will fly at altitudes below 500 feet
9 above ground level. However, particularly while they are
10 at these interior feeding locations, or loafing areas,
11 they will occasional swirl up into the air and climb up
12 to much higher altitudes above these interior
13 locations. This normally happens on days when the
14 atmospheric conditions are such that thermals, there is
15 a strong thermal development, rising air columns that
16 allow the gulls to soar up to high altitudes without
17 expending much energy to do so.

18 It is common for gulls, under such
19 conditions, to soar up to altitudes of 2000 feet and
20 occasionally 3000 feet above ground level in these
21 thermals above interior locations where they are
22 concentrated.

23 Less common, but occasionally, they may
24 also get involved in this soaring activity while they
25 are at the high altitudes while they are on-route



1 between their inland locations, their daytime locations
2 and the roosting areas that they go to at night. The
3 more common place for the soaring to occur is above the
4 interior locations where they concentrate on the
5 landfill sites or some other sort of site.

6 Q. The altitudes that you mention,
7 2000 to 3000 feet, how does that relate to the general
8 height of a circuit at Burlington Air Park?

9 A. The normal height of aircraft
10 after they have made their initial climb and levelled
11 off, is about 1000 feet above ground level. That is
12 the altitude that they would be maintaining along the
13 downwind leg, as it is called, of the circuit. That is
14 the leg that is parallel to the runway and then offset
15 by a mile or so. So, an aircraft that is going around
16 the circuit at that altitude is above the height at
17 which most gulls do their commuting back and forth
18 between the lake and the interior site. It is certainly
19 well within the range to which gulls will soar up under
20 these particular atmospheric conditions I have
21 described.

22 Q. Now, I would like to turn back to
23 your report, Exhibit M-390, page 8, where you have some
24 comments with respect to the proposed landfill site
25 operation. I wanted to draw your attention particularly



1 to the bottom of page 8 where you comment on the
2 proposal for storm water retention ponds at Site D.
3 Could you tell the Board about their significance in
4 your opinion, with respect to the hazards you are
5 looking at here?

6 A. As I just mentioned, the locations
7 where there is standing water available near a feeding
8 area, are areas that are particularly attracted to
9 gulls for loafing. So, the presence of standing water
10 actually on the landfill site property would enhance
11 its overall attractiveness as an interior concentration
12 point for gulls.

13 Q. Then you also discuss the four
14 bulk bins that were mentioned in the Trow design
15 report, page 73. What significance in your view do they
16 have?

17 A. Well, that report does not
18 describe the specific arrangements for these bulk bins
19 but if they are such that gulls can get access to them
20 during the daytime then the availability of food scraps
21 at those bins, again will provide another focal point
22 on the overall landfill site that is attractive to
23 birds and enhance the overall attraction of gulls to
24 the site as a whole.

25 Q. Can you tell us then in your



1 experience are gulls good or not in terms of finding
2 food?

3 A. Gulls are extremely good at
4 finding food. Of course, once a landfill site is in
5 operation the gulls quickly learn that it is there and
6 they just commute straight back and forwards every day
7 without having to discover it anew each day. However,
8 even just a transitory occurrence of a food source is
9 something that gulls will normally discover quite
10 quickly. Individual gulls prospect over wide areas in
11 the interior just flying back and forth. When one gull
12 finds a source of food and descends down to it other
13 gulls that can see that gull will be attracted to the
14 site, to the presence of the first gull there and of
15 course it just builds upon itself and soon you just
16 have a large concentration of gulls. It does not take
17 them long to discover the presence of food at any
18 interior location anywhere near the distances that we
19 are talking about inland.

20 Q. At the bottom of page 9, you
21 review, you had some comments with respect to what have
22 been called the standard accepted practices of
23 landfilling that have been discussed in the Trow report
24 for the operation of the site. You have discussed those
25 in terms of the site management techniques in terms of



1 bird hazards and attractiveness. Could you comment
2 briefly on that?

3 A. The design and operations report
4 prepared by Trow specifies that no particular bird
5 deterrent measures aside from the standard accepted
6 practices of sanitary landfilling are planned. Now,
7 these practices one gathers from reading other parts of
8 the report are things like covering the waste at the
9 end of the day with clean fill so that at the end of
10 the day there is no exposed food in terms of things
11 that would be attractive to gulls. Maintaining a small
12 and active area on any given day as possible.

13 Those would be a couple of the main
14 points. My point about that is, that those measures,
15 while certainly desirable in terms of reducing the
16 amount and duration, the amount of, the area of food
17 that is accessible to gulls and the duration of time
18 that food is accessible, they will by no means prevent
19 gulls from being attracted to that landfill. Landfills
20 that follow those practices invariably, if they are
21 anywhere near a water body that has a concentration of
22 gulls upon it, will attract a substantial number of
23 gulls.

24 Q. Now, the next section of your
25 report deals with the evaluation of the bird hazard.



1 You have discussed some of the matters here. I don't
2 want to repeat any of that. I think at page 10 at the
3 bottom of the page, you do refer to airports located,
4 some airports located near locations where gulls
5 congregate and you say Ontario examples include Toronto
6 Island Airport which is near the ring billed gull
7 colonies at Mugg's Island and Leslie Street Spit. At
8 Canadian Forces Base Trenton which is near a landfill
9 site that attracts gulls and the North Bay Airport
10 which is also near a landfill site.

11 You go on to say no crashes or human
12 fatalities have occurred as a result of bird hazards at
13 these airports. However, collisions of aircraft with
14 gulls have occurred at each of these airports. You
15 have, in your witness statement, have done some
16 analysis with regard to statistics on those particular
17 airports?

18 A. Yes, included as Appendix 1 to my
19 written statement, M-389, there is some information
20 about the number of reported bird collisions with
21 aircraft, rather gull collisions with aircraft, at
22 those three airports we have just referred to during a
23 five year period, 1981 through 1985. Those data come
24 from the data base that is maintained through the co-
25 operation of the International Civil Aviation



1 Organization and Transport Canada. Those statistics
2 were referred to me in the form of computer printouts
3 through Transport Canada and I have summarized them
4 there.

5 Q. I think you have noted in this
6 appendix at each of these airports that there are
7 measures taken varying from airport to airport to try
8 and mitigate the hazards?

9 A. That is correct. At each of those
10 airports there are significant measures taken to try
11 and reduce the numbers of gulls present. As summarized
12 in that Appendix 1 despite those measures there are
13 bird and particularly gull collisions with aircraft at
14 each of those airports. There undoubtedly would be more
15 such collisions if the measures which are now taken at
16 these airports were not being taken.

17 Q. What is your experience or
18 understanding with respect to "reported bird strikes"
19 as opposed to bird strikes that actually happen?

20 A. Well, it is widely known that not
21 all bird strikes that occur are even recognized if
22 they don't cause significant damage. Not all bird
23 strikes that occur find their way into the statistics.
24 In particular the reporting rate is believed to be
25 lower for small privately operated aircraft of the



1 types that occur. Well, for example, at Burlington Air
2 Park predominantly and to a large extent at Toronto
3 Island as well than for large commercial military
4 aircraft where the operators of those aircraft place
5 quite stringent demands on their pilots and maintenance
6 personnel to make these reports.

7 Q. Looking at the Toronto Island
8 Airport statistics under the heading, type of plane
9 involved, could you comment with respect to the size
10 and type of plane in relation to those which you have
11 seen or you understand use Burlington Air Park?

12 A. In that five year period there
13 were three reported collisions with gulls at Toronto
14 Island Airport, two of which were with Piper Navaho's
15 which are small relatively small piston engine powered
16 aircraft of the type that can use Burlington Air Park.
17 One was with a somewhat larger twin engine turboprop
18 powered commuter aircraft of a type that does not use
19 Burlington Air Park.

20 Q. In each case, that is in the case
21 of each of these statistics for Toronto Island, Trenton
22 and North Bay, there is a category of whether or not
23 the pilots were warned with respect to the presence of
24 birds. What conclusions, if any, have you drawn from
25 whether or not a warning to pilots that birds are in



1 the area would have any effectiveness?

2 A. Yes, in many of these cases the
3 pilots in fact were warned that there were gulls or
4 other birds on or near the airport at this particular
5 time. The point is that some of these strikes occur
6 even when pilots are aware that there is a particularly
7 acute collision hazard. So, the fact that the pilots
8 may be aware that a particular airport that has a
9 greater than average bird problem by no means is
10 sufficient to cause the pilots to be able to avoid
11 birds.

12 Q. Now, did you look at the time you
13 were examining Transport Canada's statistics for this
14 time period as to whether there were any statistics or
15 reported bird strikes at Maple Airport?

16 A. Yes, we did request those
17 statistics from Transport Canada and the information
18 that came back was that there were no reports of bird
19 collisions with aircraft at Maple Airport during that
20 period. Maple Airport, of course, is or was, a small
21 airport, an airport used primarily by the same types of
22 aircraft that use Burlington Air Park, located north of
23 Toronto. An airport that was close to a landfill site.

24 Q. You examined and have appended to
25 your report a witness statement, 1982, a study by



1 Ecologistics Limited of gull movements in the vicinity
2 of the Maple Airport. That is found at Tab 2?

3 A. Yes, it is.

4 Q. What did those observers report
5 with regard to incidents during this period?

6 A. It is interesting that they were
7 at that airport on just 14 mornings and during those 14
8 mornings they actually observed in this report, it is
9 included at Appendix 2, they observed an aircraft, a
10 Piper Aztec, twin engine piston aircraft strike and
11 kill a gull. They also mention at least one specific
12 instance of observing a pilot manoeuvring to avoid
13 birds during the course of, I don't remember whether it
14 was a take-off or a landing, but one or the other at
15 Maple Airport.

16 One of the interesting points about this
17 is the fact of the bird that they observed being
18 killed, that gull they observed being killed was an
19 observation in 1981 which was within the period that we
20 requested the statistics, so this is an indication of
21 apparently the case where the bird strike did occur and
22 it was not reported, did not find its way into the
23 official statistics.

24 It is an example of what I have just
25 described that not all bird strikes are reported and



1 the number that are reported are less than actually
2 occur.

3 Q. Did you find any other important
4 relevant observations in the Maple study that might be
5 of relevance here in terms of whether the landfill site
6 being observed did attract gulls?

7 A. Yes, there is a set of
8 observations in that report, if I can find the page
9 number, it is on page 25 of Appendix 2 to my witness
10 statement, which summarizes the number of gulls that
11 the authors of this report saw at various locations
12 they censused on the various days they were there in
13 1981.

14 The interesting, one of the interesting
15 points there is that at the location for existing
16 landfill site there were gulls present on every
17 occasions that they visited. It was the only site of
18 the several types of site that they looked at that did
19 have gulls that consistently. This is not surprising at
20 all, it is very much consistent with observing other
21 landfill sites, landfill sites are the most consistent
22 attractors of gulls to interior locations.

23 Q. Did you ever visit that landfill
24 site?

25 A. I have not actually gone on to the



1 landfill site. I have been along the edge of it on a
2 number of occasions.

3 Q. Are you in a position to tell us,
4 I don't know whether you are or not, as to what if any
5 mitigation measures were in place at that landfill
6 site?

7 A. I am not really in a position to
8 say that. I should also point out that the landfill
9 site that was observed by the authors of this report in
10 1981 was a comparatively small landfill site used by
11 the local community and taking a low tonnage of refuse.
12 There is a greatly increased sized landfill site very
13 close to that old one that is now one of the two main
14 landfill sites for the Toronto area.

15 So, that the number of gulls that are
16 reported here in line 4 of this table on page 25 of
17 Appendix 2 are numbers that are attracted to a very
18 small landfill site and not likely to be at all
19 consistent with the numbers that would come to the
20 large landfill site presently under consideration.

21 Q. If you turn to page 24 there is a
22 table of bird and aircraft incidents, page 24 of this
23 Appendix 2. I believe you mentioned one or two of
24 these. Have you had occasion to observe yourself
25 similar kinds of incidents. Are these common or



1 uncommon?

2 A. I have not observed such incidents
3 at Maple Airport. I have only visited there once or
4 twice. I have observed gulls, I have often observed
5 gulls flying off just ahead of aircraft that are taking
6 off and landing. I have not observed an actual bird
7 strike of the type that is listed here in this table
8 relating to August 13th, 1981 which is the incident I
9 described earlier.

10 Q. Now, we have heard earlier in this
11 hearing and you yourself have said something about the
12 fact that there are bird colonies in the vicinity of
13 Toronto Island Airport. You have given us some
14 statistics related to Toronto Island Airport. Can you
15 comment as to how relevant, in your opinion, those
16 statistics are, having in mind the relationship of the
17 airport to where the gull colonies are?

18 A. Yes, the situation --well, we
19 brought up the situations at Toronto Island, at Trenton
20 and at North Bay, because these are cases that are well
21 known to involve places where large numbers of gulls
22 occur for one reason or another near an airport and
23 those airports are operating. So, it is obviously of
24 interest to know to what extent gulls are causing a
25 problem at those airports.



1 In the case of Toronto Island and gulls,
2 perhaps I should show an overhead that shows the layout
3 there. Okay, this is the Toronto Island, that is the
4 public park. That is Toronto Island Airport over here
5 and this is downtown Toronto. This is what used to be
6 known as the Leslie Street spit out here. Other times
7 known as Tommy Thompson Park. In any case points of
8 interest on this map are Toronto Island Airport, Mugg's
9 Island, particularly the north end of Mugg's Island
10 which has a colony of gulls on it.

11 Most recently, in 1987, approximately
12 6000 pairs of gulls attempted to nest on Mugg's Island.
13 Then the Leslie Street Spit which has had a very
14 rapidly expanding colony going from nothing in the
15 early seventies to a peak of something in the order of
16 75,000 to 80,000 pairs of ring billed gulls in the
17 1980's and then control measures have been instituted
18 in the last three years or so and the numbers in 1987
19 were about 45,000 pairs of gulls on this part, this A,
20 B, C part of the Leslie Street Spit.

21 So, as you can see Mugg's Island, Mugg's
22 Island colony based on the scale down here is within a
23 kilometre of the Toronto Island Airport. Leslie Street
24 Spit, a huge colony there is in the order of 5
25 kilometres from Toronto Island Airport. So, the



1 question arises with all these gulls in that area, what
2 does that do to Toronto Island Airport.

3 Well, Toronto Island Airport has a long
4 history of bird problems including gulls that have from
5 time to time actually tried to nest on the airport
6 property itself. Most recently in the last couple of
7 years. There are, as summarized for a few years in my
8 report, bird strikes, gull strikes at Toronto Island
9 Airport. Active control measures have been taken and
10 are continuing to be taken at Toronto Island Airport
11 because of the recognition that gulls are a problem
12 there and they will undoubtedly be more strikes if, for
13 example, those colonies had been allowed to persist on
14 the airport itself.

15 To the specific question of how does the
16 behaviour of gulls in relation to these two colonies
17 near Toronto Island Airport relate to the situation we
18 are potentially confronted with at Site D and the
19 Burlington Air Park. The gull situation here will be
20 quite different from that at the Burlington Air Park
21 area. Here the focus of the gull activity is at the two
22 colonies.

23 Let us look at the Mugg's Island one for
24 the time being because it is the closest. While the
25 gulls are engaged in nesting activity they will be on



1 that island and will not be on the Toronto Island
2 Airport. During the time when gulls are actually
3 breeding they spend the night on the colony, or many of
4 them do. During periods adjacent to the breeding
5 season we found in the 1983 study that I described
6 earlier that gulls that breed in this area roost out
7 here on Lake Ontario.

8 So, the primary movements of gulls in
9 relation to the Mugg's Island colony will not take the
10 gulls over the Toronto Island Airport. This is not to
11 say that the gulls that are associated with the Mugg's
12 Island and the airport do not at some time venture over
13 the Toronto Island Airport. The point is that the
14 primary directions of approach and departure from the
15 Mugg's Island Colony are not over the airport, but
16 undoubtedly gulls will go over the airport from time to
17 time.

18 Q. Is there, you I think indicated in
19 the statistics something about a program by the
20 Metropolitan Regional Conservation Authority to try and
21 deal with nesting?

22 A. Yes. I mentioned earlier that the
23 Transport Canada people at the airport itself of course
24 tried to control the gull problem and the bird problem
25 generally on the airport and have in fact destroyed



1 gull nests that gulls were attempting to establish a
2 colony there in the last couple of years. On Mugg's
3 Island and on the Leslie Street Spit, Metro Toronto
4 Conservation Authority has been trying to reduce the
5 numbers of gulls for other purposes, because of various
6 complaints that have been raised about the rapidly
7 increasing numbers of gulls, and problems people
8 perceive with them asides from bird hazards to aircraft
9 problems.

10 So, they have been actually taking the
11 eggs from the nests of the gulls on Mugg's Island and
12 in some years taking other control measures there as
13 well and not allowing the gulls to complete their
14 nesting activities on Mugg's Island. On the Leslie
15 Street Spit in the last three years or so the gulls
16 that were attempting to nest in this part of the spit
17 have been deterred from doing so by a whole variety of
18 control measures that have been instituted. Gulls are
19 still allowed to nest unmolested on the parts that are
20 shown as A, B and C.

21 Because of those control measures on the
22 Leslie Spit that is why the numbers of gulls nesting
23 there have been reduced in the peak of 75,000 to 80,000
24 in the early eighties down to 40,000 in 1986, and
25 45,000 in 1987, pairs.



1 MR. ESTRIN: Can we mark this diagram of
2 the Toronto Harbour area as the next exhibit?

3 MR. LANCASTER: M-398.

4 ---EXHIBIT NO. M-398: Diagram of Toronto Harbour Area

5 MR. ESTRIN: Q. Now I would like to turn
6 to your witness statement for a moment. With reference
7 to a comment you made before the break about how
8 experts in this area are unanimous that it would be
9 preferable not to locate the landfill site between a
10 roosting area, I am not sure I used the right term,
11 between an area such as the water body of the lake, and
12 the source of food. At page 5 of your witness
13 statement you refer to some matters that I think bear
14 on this and I wanted to ask you for your comments.

15 I think particularly under the heading
16 C, the ICAO reference, part 3, bird control and
17 reduction and garbage. Mr. Chairman, the actual text
18 appears also at Tab 5 of Mr. McDonald's witness
19 statement. This is simply a quotation, a direct
20 quotation of it.

21 Can you tell us, please, whether you
22 agree or disagree with that ICAO position?

23 A. I guess I do agree with that.

24 Q. Then, could you turn to page 6 of
25 your witness statement. You quote there certain



1 writings of Victor Solman, is it, Dr. Solman?

2 A. It is Dr. Solman. Yes, I do know
3 him.

4 Q. In what capacity have you known
5 him?

6 A. Well, he was one of the Canadian
7 Wildlife Service representatives to the bird hazards to
8 aircraft committee in its later days and was later
9 chairman of the National Research Council's bird
10 hazards to aircraft committee and has more recently
11 been, since he retired from the Canadian Wild Life
12 Service, a consultant dealing with bird hazard to
13 aircraft matters.

14 Q. The article quoted is 1973 and it
15 refers to basically, I am looking at the last
16 paragraph. In the associated committee he says:

17 "We have tried to bring together our
18 best ideas and those of our colleagues
19 in other countries who face the same
20 problem. "

21 Continuing it says:

22 "We believe the relationship between
23 airports and edible garbage disposal
24 areas should take account of the
25 following points:. . . "



1 And we see point No. 1, being a six mile separation
2 suggestion. Secondly, food wastes should not be
3 disposed of in the open. Perhaps you could just
4 continue reading that No. 2 there, and comment on
5 whether or not you agree with that and how that is
6 pertaining to the proposed Site D.

7 A. Right. Dr. Solman makes the
8 point:

9 "Food wastes should not be disposed of
10 in the open at the location which would
11 cause birds to cross an airport or its
12 flightways in which aircraft move at low
13 altitudes to reach areas they. . . "

14 I take it referring to birds:

15 ". . . they use for purposes other than
16 feeding. In other words, if an airport
17 is a few miles from the ocean, a large
18 lake or a river frequented by gulls,
19 don't put the garbage dump on the other
20 side of the airport so that the gulls
21 will cross the airport several times a
22 day in moving between the water area and
23 the garbage dump area. "

24 So, that is an example of someone commenting on this
25 situation that is recognized as being one of the most



1 hazardous from a bird hazard to aircraft viewpoint.

2 As I have already indicated, I certainly
3 agree with what Dr. Solman says there.

4 Q. In your turning back to your
5 report you have also included as an appendix United
6 States Federal Aviation policy regarding its solid
7 waste disposal facilities. I am looking at page 44 of
8 your green Exhibit M-390. We have already seen the
9 Canadian, Transport Canada's criteria.

10 Could you summarize these criteria
11 briefly and tell us how it is relevant to evaluating
12 the situation at Site D?

13 A. Right. Well, as I indicated
14 earlier, different regulatory agencies in different
15 countries and jurisdictions have their own
16 interpretation of the best way to implement their
17 policies. The FAA in the United States, in co-
18 ordination with the environmental protection
19 organization which has some jurisdiction in these areas
20 as well, have adopted a procedure which aims to get at
21 the same problems.

22 I guess, if you look at page, in my
23 report, Exhibit 390, page 49, under item 5 on page 49,
24 it lists criteria. Just to paraphrase what that says is
25 that you shouldn't have a landfill site within 10,000



1 feet or about 2 miles of any runway used or planned to
2 be used by jet aircraft. You shouldn't have a landfill
3 located within 5000 feet or about 1 mile of any runway
4 used by piston-type aircraft.

5 In addition to those restrictions that
6 landfills that are located such that gulls or other
7 birds will fly across the airport or through the
8 approach and climb-out paths of the airport on-route
9 between locations, two different locations that those
10 birds frequent, that situation should also be avoided
11 regardless of the distance of the landfill site from
12 the airport.

13 So this last point again applies to our
14 situation here. The birds and particularly gulls will
15 indeed fly through the approach and climb-out paths and
16 to some limited extent even over the airport itself
17 while on-route between a roosting area on Lake Ontario
18 and Site D if the landfill site was placed there.

19 So, I guess to summarize then I would
20 say the point of all that is that while the U. S. has
21 different guidelines than we have in Canada the U. S.
22 guidelines would also say that this was a bad situation
23 from a bird hazard point of view.

24 Q. Now, in your witness statement at
25 Tab 6, I want to make sure I get it right. You have



1 included an excerpt from testimony of Dr. Solman at an
2 Environmental Assessment Board hearing in August of
3 1987. I wanted to draw your attention to these two or
4 three pages to ask you to comment as to whether or not
5 you agree or not with his position or concerns here.
6 Beginning at page 3969.

7 Mr. Chairman, it is at Tab 6 of the
8 witness statement. Beginning at outline 6 here, line 4,
9 he says:

10 "But the fact is that a lot of the gulls
11 are attracted to the general area of the
12 Base by the landfill and if you are a
13 pilot then you are faced with bird
14 damage to your aircraft. It doesn't
15 matter whether it is as you are rotating
16 off the runway or even before that point
17 or are climbing over the landfill or
18 climbing beyond the landfill. You still
19 have an emergency to deal with and
20 sometimes you can deal with that
21 emergency effectively and sometimes you
22 can't. "

23 And then he went on to tell the Board about a
24 particular incident. A twin engine aircraft and
25 towards the bottom of the page he says:



1 "So, if you lose an engine you can still
2 keep the airplane in the air if you do
3 everything right and you say the crews
4 are trained to do everything right. "

5 Continuing on the next page he says:

6 "I have to admit, say, indeed that is
7 true, but under the stress produced by a
8 bird strike, this is an unusual
9 occurrence, thank goodness it is
10 unusual, people do the wrong thing. "

11 He mentions another case about a Convair and sparrow
12 hawks. One engine shutdown and there should have been
13 no problem he says at line 19 with that, but with the
14 one catch in the single operation of a twin engine
15 aircraft is if you make a turn you have to make sure
16 you are going fast enough to make a turn or you are
17 going to get a stall and he goes on at the next page to
18 relate the damage that was caused in that particular
19 incident. He says:

20 "The National Transportation Safety
21 Board determined the probable cause of
22 the accident was the failure of the
23 captain to follow the prescribed engine
24 off procedures which allowed the
25 aircraft to decelerate into a flight



1 regime from which it could not recover.

2

3

Now I put that in for two reasons. We
haven't said much about the stress and
what it may do to the crews reactions.

5

6

Indeed I worry as much about crew

7

reaction under stress as I do about

8

physical damage to the aircraft itself

9

in a bird strike. "

10 I will give you the pages. Have you any comments on
11 that?

12

A. This is a specific example of the
situation where in this case an experienced airline
pilot apparently did not execute the optimum procedures
when he was faced with an unusual circumstance and the
airplane crashed as a result of that bird strike. At an
airport like the Burlington Air Park you are dealing
primarily with, in many cases, with pilots that have a
lot less experience than this. There are this case
involved a sparrow hawk not a gull.

13

14

15

16

17

18

19

20

21

There are, however, similar incidents
that, just a couple that I know of, that actually
involved smaller aircraft and gulls. In one case an
aircraft taking off, a small turboprop aircraft called
a Turbo Commander which is a type that does in fact

22

23

24

25



1 come into Burlington Air Park, taking off from an
2 airport along the Chicago waterfront. Took off ran
3 into gulls and lost an engine and again was determined
4 to be the faulty action of the pilot in not following
5 optimum single engine procedures that aircraft crashed
6 and the pilot and three passengers were killed as a
7 result of that gull strike.

8 So, these are a couple of examples of
9 the fact that even bird strikes can cause enough damage
10 that it makes an aircraft such that it is inevitable
11 that it is going to crash land, but even if it does not
12 necessarily cause enough damage that it will make it
13 inevitable that the plane will crash land, there can be
14 sufficient distraction to a pilot, an inexperienced
15 pilot or a sufficiently abnormal situation that a pilot
16 may not do the optimal thing and may in fact lose
17 control of the aircraft even if it is theoretically
18 possible to recover from that situation.

19 Q. One of the last topics that I
20 wanted to refer you to is possible mitigation measures,
21 assuming an airport were considered to be established
22 at Site D. You discussed that generally in your report,
23 Exhibit M-390 at pages 14 to 16, or really going up to
24 17.

25 We have already had your conclusion



1 about mitigation measures in paragraph 10 of your
2 conclusion statements on page 20. I wanted to really
3 then refer you to something that doesn't appear in your
4 report on this topic and that is in your witness
5 statement.

6 The first thing I want you to do is draw
7 your attention to Tab 5 and the book of Hans Blokpoel.
8 Can you tell us who Dr. Blokpoel is?

9 A. Dr. Hans Blokpoel is a biologist
10 with the Canadian Wild Life Service. He worked through
11 the Canadian Wild Life Service with the bird hazard to
12 aircraft committee --I am not sure exactly --
13 approximately 1970 for many years on the hazards to
14 aircraft questions and he continues to do so on a part-
15 time basis along with other duties.

16 He wrote a book in 1976 that was
17 essentially a summary of the work that was done and was
18 known to the NRC's bird hazard to aircraft committee at
19 that time, which was the time when the bird hazards
20 committee of NRC ceased operation and turned its
21 responsibilities to another group. Dr. Blokpoel
22 is a specialist in bird hazards to aircraft.

23 Q. At pages 149 and 150 he relates
24 case histories at some Canadian airports where there
25 were landfill sites proposed or active in the vicinity.



1 I wanted to ask you whether these situations that he is
2 discussing here, I particularly draw your attention to
3 about the middle of page 149:

4 "As an airport authority has no direct
5 control over matters outside his
6 territory, it is often extremely
7 difficult to implement the
8 recommendations made by experts.
9 Progress is usually slow for a variety
10 of organizational, legal, financial and
11 political reasons. It is easy for a
12 visiting biologist to recommend that the
13 garbage dump at the end of the main
14 runway to be closed, but it is a
15 different matter for the airport manager
16 to apply that advice. "

17 I take it you have had occasion in your position as a
18 biologist to make recommendations. That's correct, is
19 it?

20 A. Yes.

21 Q. Can you comment in terms of your
22 experience as to your personal experience and that of
23 other people that you are aware of as to the extent to
24 which it is your experience coincides with that kind of
25 a statement?



1 A. Yes, I think that is a reasonable
2 statement. Hans Blokpoel is indicating that once a
3 landfill site is established anywhere including near an
4 airport it is often very difficult to change its
5 location. It is not impossible to do so and there are a
6 number of cases in Canada, not to mention elsewhere in
7 the world, where the presence of landfill sites near
8 airports has, it is widely known to cause serious bird
9 hazard to aircraft problems and negotiations have been
10 going on for years, even decades in some cases, to try
11 and get that landfill site closed in order to solve
12 this bird hazard to aircraft problem and it has often
13 not been possible to do that.

14 So, one of the conclusions one can draw
15 from this is that if you have a situation where the
16 landfill site does not now exist and a decision has to
17 be made where to put it. If we do have alternatives and
18 one of them is near an airport and one of them isn't
19 and they are both acceptable for other reasons, then
20 from the bird hazard to aircraft viewpoint it would be
21 best to choose the site not near an airport.

22 Q. If you would turn back to your
23 witness statement, page 5, it begins on page 4. There
24 is another reference to an article by Dr. Blokpoel and
25 I quote at the bottom of page 4:



1 "Gull problems at Ontario airports:

2 No magic solutions. "

3 He discusses, he says they may fly across the airport:

4 "In order to get rid of gulls at
5 airports and/or dumps persistent day-to-
6 day harassment of the birds is
7 necessary. A variety of methods
8 including shell crackers, live
9 ammunition, distress calls and falcons
10 used conscientiously and carefully by a
11 highly motivated patrol team will
12 produce the best results. Operations of
13 such teams are expensive but their costs
14 might be considered as a form of
15 insurance against major disasters and/or
16 claims of malpractice for inadequate
17 airport maintenance. There are no magic
18 or cheap solutions to solve the gull
19 problems at Ontario airports. "

20 Would you agree with that statement?

21 A. Yes, that is true, but one point
22 that is made elsewhere but not made here is, that there
23 is one comparative simply solution, is not to have the
24 landfill site near the airport in the first place if
25 that can be avoided.



1 Q. While we are referring to these
2 devices such as shell crackers, live ammunition,
3 distress calls and falcons. Have you had occasion to
4 observe a few of these devices in the field?

5 A. Yes, some of them.

6 Q. There are other devices, I am not
7 sure, something called a propane cannon?

8 A. Yes.

9 Q. Can you describe what that is?

10 A. Well, these are devices that
11 produce a loud bang at varying intervals by mixing
12 propane and oxygen and triggering off an electric spark
13 in order to make a bang that will scare birds away.
14 They are commonly used by fruit orchard operators to
15 try and reduce the number of birds that are
16 concentrating in their orchards.

17 Q. Can you do --we know from previous
18 evidence in this hearing there are a number of
19 residences located along First Line immediately west of
20 the proposed Site D, and I take it you have had
21 occasion at least to drive up that road?

22 A. Yes. Well, perhaps what you are
23 getting at is the fact that some of these control
24 measures that one might consider for trying to keep
25 gulls away from, or other birds away from a landfill



1 site if it was deemed necessary to do that, produces a
2 lot of noise like propane cannons or shotguns being
3 fired off.

4 These certainly can lead to public
5 complaints if there are residences or other places
6 where the public is present close to the boundaries of
7 the landfill site. We were discussing early this
8 morning this project that I am involved in in
9 Anchorage, Alaska where at a test landfill site where
10 various control measures were being tried out to
11 determine their effectiveness at keeping gulls away.
12 They were using shotguns firing and various pyrotechnic
13 devices as well as live shells.

14 There was a case where there were public
15 complaints about the noise that was caused by these
16 bird control measures.

17 Q. Is there any danger in your
18 experience or opinion arising from the use of such
19 devices either to the personnel or themselves or to
20 people who happen to be in the vicinity?

21 A. These devices are very widely used
22 and can be used with a reasonable degree of safety.
23 However, they certainly --precautions must be taken.
24 Shell crackers can explode just as they are leaving the
25 barrel of a shotgun rather than a long distance out as



1 they are supposed to do and they can even wedge in the
2 barrel of the shotgun and cause problems the next time
3 somebody fires that shotgun if they haven't noticed
4 that the barrel is blocked. There is always a fire
5 hazard around any kind of devices that involves small
6 explosions.

7 So, certainly a continuing degree of
8 caution is necessary in operating some of these
9 devices.

10 Q. While we are on this particular
11 topic of mitigation measures that may or may not be
12 effective, could you turn please to page 7 of your
13 witness statement. Another article by Dr. Solman:

14 "Reducing gull use of some attractions
15 near airports. "

16 At the bottom of page 70 he is quoted as saying:

17 "In the past we have been lucky to have
18 so few fatalities caused by gull
19 strikes. We must not depend on luck and
20 must therefore try harder in future to
21 keep gulls out of the paths of aircraft
22 in order to avoid serious accidents and
23 casualties. "

24 Stopping there, would you agree with that?

25 A. Yes.



1 Q. Going on, he says:
2 "We have tried several methods of gull
3 control over the past 30 years including
4 environmental modification of the
5 airfield and, with public assistance off
6 the airport, we have used a variety of
7 scaring devices such as recorded
8 distress calls, flying repellents
9 including live trained falcons and
10 falcon-shaped radio controlled model
11 aircraft and patrols using sounds,
12 lights, exploding shotgun shells, live
13 ammunition and automatic explosions. "

14 Stopping there, have you had occasion to see many of
15 these?

16 A. Many of them, yes.

17 Q. He goes on to say:
18 "All of these techniques work at some
19 times and places but no single one works
20 under all circumstances and all depend
21 on human action and motivation, neither
22 of which is infallible. "

23 Would you agree or not with that last comment?

24 A. Yes, that is very much true. Well,
25 all bird hazard people make that comment and I have



1 certainly had personal experience with sites where
2 various control measures have been in effect. When
3 something breaks down or goes wrong, as it almost
4 inevitably will with most or all of these control
5 measures, it is not always true that the people that
6 are responsible for maintaining the control measures
7 will promptly rectify whatever the problem has been.

8 So, there can be a gap in the
9 application of a control technique. Whenever a
10 technique that depends on human persistence and
11 motivation is involved.

12 Q. The last part of your witness
13 statement deals with a comment that you have with
14 respect to previous exhibits and testimony. I don't
15 know that, in order to keep this short, I am not going
16 to put to you the actual Exhibit H-17. You have
17 reviewed that exhibit?

18 A. Yes.

19 DR. KINGHAM: Can you tell us where you
20 are?

21 MR. ESTRIN: I am at his witness
22 statement, page 9. Maybe to make sense of this we will
23 have to have Exhibit H-17 in front of us.

24 Mr. Chairman, maybe this is the
25 appropriate time to take the lunch break and I believe



1 that I will be able to conclude after lunch within
2 perhaps three-quarters of an hour. For everyone's
3 benefit, perhaps they could have Exhibit H-17
4 available. There may be another referred to here, I am
5 not sure. Exhibit H-104 as well. There are also some
6 comments with regard to transcript references, but I
7 don't intend to get into those in any great detail.

8 MR. LANCASTER: We will adjourn until
9 1:45.

10 MS. CRONK: Mr. Chairman, before you
11 rise as I will be unable to be here this afternoon, I
12 would like to identify for the Board my colleague, Mr.
13 Colin Griffiths who will be representing and assisting
14 me throughout the hearing balance of the year.

15 MR. LANCASTER: The balance of the year.

16
17 MS. CRONK: I would like to say the
18 balance of the hearing.

19

20

21 ---Luncheon Adjournment at 12:20 p. m.

22

23

24

25



1 ---Upon resuming at 1:45 p.m.

2 MR. LANCASTER: Please be seated.

3 MR. ESTRIN: Q. Dr. Richardson, we are
4 going to be referring to your witness statement at page
5 9, the beginning of page 9. There is one question I
6 want to ask you before we deal with the topic that is
7 discussed there and that is this. I believe you heard
8 from Mr. Kovachik who will be giving evidence to this
9 effect that there have been two incidents at Burlington
10 Air Park involving birds and aircraft.

11 What is your understanding of those two
12 incidents, first of all?

13 A. He has advised me that he knows of
14 two collisions between birds and aircraft using
15 Burlington Air Park, one of which involved a gull. The
16 other which the species of bird involved is not known.
17 In both instances the bird collided, the aircraft
18 collided with the bird. The aircraft that collided
19 with the bird was a light aircraft and caused no damage
20 to the aircraft.

21 Q. Given that there is no landfill
22 now in the vicinity of Burlington Air Park, what
23 significance, if any, did those incidents have in your
24 view?

25 A. Well, it indicates that as we know



1 gulls can occur at almost any inland location and there
2 is some small probability of striking a gull in the
3 absence of any specific attractant of gulls to the
4 vicinity of an airport. It is also interesting in that
5 it indicates that even without a specific attractant of
6 gulls to that area it is possible for a bird strike to
7 occur and therefore if you greatly increase the number
8 of gulls coming to an area, then it is very likely that
9 there will be a measurable number of bird strikes
10 there.

11 Q. Now, if we can look at your
12 witness statement at the beginning of page 9 where you
13 are commenting on some of the evidence, exhibits
14 previously entered. There is reference to page 80 of
15 Exhibit H-17. I don't know if the Board has a copy of
16 Exhibit H-17 handy. At page 80.

17 Looking at the comment on page 80 under
18 the heading "Birds", there is a statement about halfway
19 down the page:

20 "Moreover some species, especially
21 gulls, may be attracted to a landfill
22 site from substantial distances."

23 That I take it you agree with?

24 A. Yes.

25 Q. It goes on:



1 "However, if the abundance of food on
2 the site is not changed substantially
3 from that available before the site was
4 a landfill (as in the case of a well
5 managed landfill that was formerly
6 agricultural and surrounded by
7 agricultural land) then the population
8 and congregations of birds in the area
9 should not change substantially."

10 Do you agree with that? There is an inference there.

11 A. If it were possible to avoid an
12 increase in the availability of food, food for gulls at
13 a landfill site, then indeed one would have to agree
14 with that. The fact is that it is essentially
15 impossible to avoid making available to gulls at any
16 sanitary landfill site a greatly increased amount of
17 food to attract the gulls than was there before.
18 Therefore, it would not be possible without taking some
19 other major measures to prevent, one would expect that
20 the population, the number of birds in the area would
21 in fact increase substantially.

22 Q. Then at pages 104 to 112 of this
23 document there are various scaring techniques
24 discussed, acoustical scaring, visual. There seems to
25 be an inference that these techniques can mitigate any



1 problem that would develop. I think you have touched
2 on this topic already earlier when you referred to
3 Dr. Blokpoel and Dr. Solman, but perhaps again that ...

4 A. There are a variety of techniques
5 that are mentioned there that indeed do include a
6 number of ones that have been used to try and control
7 birds that come to airports and on a few occasions
8 landfill sites. Some of those techniques do indeed
9 have some usefulness in reducing the number of gulls
10 and other birds that come to a particular site. There
11 are a number of points I guess about this. One of them
12 is that somewhere in Exhibit H-17, I believe it is page
13 109 in that section, it mentions that these techniques
14 have not been applied previously at landfill sites.
15 That is mentioned on page 109 near the bottom, the few
16 lines at the bottom, they have not been instituted at
17 landfill sites primarily because of various reasons. In
18 fact some of these techniques have been employed at
19 landfill sites, for example, the landfill site adjacent
20 to Trenton Airport and the North Bay Airport.

21 The other concern I have about this is
22 that while various scare techniques are mentioned and
23 other bird control techniques are mentioned in the Bird
24 & Hale report, Exhibit 17, in other places for example,
25 Exhibit H-104, recommendations prepared by Miss Hellas



1 that you have before you, it appears to suggest that
2 these techniques should only be applied at the Air Park
3 and it doesn't mention applying them at the landfill
4 site.

5 If a landfill site were going to be
6 established at Site D then certainly the most obvious
7 place to start trying to control the bird problem would
8 be to control the number of gulls coming specifically
9 to the landfill site by applying scare techniques,
10 perhaps including some of these and others at that
11 landfill site.

12 Q. Then, referring back to H-17,
13 beginning at page 114 to 129, there are a number of
14 recommendations that are made. You have indicated in
15 your witness statement on page 10 that with respect to
16 these parts of Exhibit H-17, this report places an
17 unwarranted onus on the Air Park to control the
18 problem. Can you elaborate on that for us?

19 A. Well, following on to what I just
20 said it is the landfill site that the birds are
21 primarily attracted to. That would seem to be the
22 obvious place to start to control the problem if the
23 landfill site is going to be established in the first
24 place. Even if one did apply these various techniques
25 at the Burlington Air Park and controlled the birds



1 that come to Burlington Air Park it would still not
2 solve the problem if the birds were still being
3 attracted to the landfill site because of the fact that
4 much of the problem that would develop involves the
5 gulls that are flying by the landfill site through its
6 approach and climb-out paths and not actually gulls
7 that are landing at the Air Park necessarily at all.

8 So, without doing something to prevent
9 gulls from flying from the lake up to Site D, anything
10 you do at the Burlington Air Park is going to be only a
11 very much partial measure in terms of reducing bird
12 hazards.

13 Q. Then at page 115 of Miss Hellas'
14 report, Miss Hellas referred to a report about the use
15 of a moveable net cage. It says if the bird population
16 still exists at too high a level and consequently is
17 causing too great a problem, consideration can be given
18 to the use of a moveable net cage over the active face.
19 Can you quote on that?

20 A. As a preamble that, the design and
21 operations report prepared by Trow for this Site D
22 actually says that they don't plan to use any of these
23 techniques at the Air Park, rather at the landfill
24 site. With respect to this particular technique, what
25 is being mentioned is a technique that was tried, as



1 far as I know, at one landfill site in Britain, and
2 involves, I will put an overhead on that shows this
3 structure.

4 What this consists of is a very large
5 net that is placed over the active face of the landfill
6 and trucks are brought underneath this net in order to
7 dump the waste. The net is, 36 x 36 metres is the
8 square of the area that it covers and it is about 10
9 metres high and it consists of a fairly small mesh
10 about 8 and a half centimetre mesh, so it is a physical
11 barrier that, provided the net isn't ripped or broken,
12 the gulls could not get inside this area.

13 Now, providing the net is maintained
14 properly it indeed should be quite an effective
15 technique for keeping gulls away from the place where
16 they might get access to the food, and therefore it
17 should be a good control technique. The practical
18 problems of manoeuvring this net over the active face
19 and manoeuvring vehicles inside it are obviously quite
20 severe. This technique has not been adopted at all
21 generally, as far as I am aware.

22 MR. ESTRIN: I wonder if we should mark
23 that?

24 MR. LANCASTER: M-399.

25 ---EXHIBIT NO. M-399: Diagram showing bird netting



1 MR. ESTRIN: Q. Then, at the same page
2 of her report, she says:

3 "At the Air Park due to the low
4 frequency of flights it would not be
5 economically feasible to start a major
6 bird scaring program, such as falconry."

7 And at page 12 of your witness statement, you indicate
8 you were going to make some comments with regard to
9 scaring programs intensive enough to be effective as to
10 whether or not they have been applied at a small
11 airport such as Burlington Air Park. Could you
12 elaborate?

13 A. First as I have indicated the
14 scaring program that one might institute at Burlington
15 Air Park is not going to solve the greatest part of the
16 problem which is potential collisions with birds flying
17 by the Air Park that would not be susceptible to any
18 control measures that you might apply at the Air Park
19 itself. Aside from that point, it is true that the
20 major scaring, as I have said in the witness statement,
21 that the major scaring programs that have been
22 instituted have been at a few, only a few airports that
23 are very large airports. We are talking about airports
24 like Vancouver and Toronto International. North Bay is
25 a somewhat smaller one. Trenton Air Force Base.



1 Even for those major airports, the costs
2 and effort associated with a major bird scare program
3 is considered to be a significant concern and as far as
4 I know there has been no attempt to institute anything
5 resembling such a comprehensive bird scaring effort at
6 or in association with an airport of the type that we
7 are talking about here.

8 Q. I take it looking at the bottom of
9 page 12 of your witness statement, referring to, you
10 are commenting on some words that Miss Hellas used, and
11 I don't have the exact page. Apparently she says:

12 "Populations of gulls in the vicinity
13 may increase."

14 You say it is not may but they will. Can you find us a
15 reference to that?

16 A. That is the top, the first
17 sentence on page 114 of the Bird & Hale report, Exhibit
18 H-17 where it states:

19 "Landfilling on Site D may increase the
20 size of the gull population in the
21 vicinity of the proposed landfill site
22 or at the nearby Burlington Air Park."

23 I simply want to point out that there is no question
24 that landfilling will cause a considerable increase in
25 the number of gulls in that area.



1 Q. Then there is some references to
2 the transcript that are noted in your witness
3 statement. Volume 6, page 1208. It is a very short
4 reference at page 1208 of the transcript of Miss
5 Hellas' cross-examination by Ms Cronk:

6 "Q. Simply put, the greater the number
7 of birds the greater the risk of
8 collision and therefore the greater
9 potential danger to the public?

10 A. Yes.

11 Q. Both to the people who live in the
12 community and the people who utilize the
13 area?

14 A. I am not aware of any sort of
15 documented increase in danger to the
16 general public as a result of the
17 operation of the landfill."

18 Can you give us your knowledge in that regard?

19 A. Yes. What we are talking about
20 here is the documented increase in danger to the public
21 as a result of aviation that is related to the
22 operation of the landfill. In fact, I am aware of a
23 couple of instances in which people on the ground have
24 been indeed severely affected by bird strikes.

25 There was an incident in Britain when a



1 business jet collided with a lapwing which is a type of
2 shore bird while the jet was taking off. The aircraft
3 crashed, went off the end of the runway and ran across
4 a road and killed six people in a car that was on that
5 road in the process of the aircraft crashing as a
6 result of the bird strike. People on the aircraft
7 survived, but the six people on the ground did not.

8 There is another incident in which a
9 business jet, a Lear jet crashed in Georgia after
10 running into cow birds that were in fact attracted to a
11 landfill site adjacent to the airport. In that crash
12 there were seven people on the business jet who were
13 killed. One person on the ground. I have seen various
14 reports on this. Some reports say the person on the
15 ground was seriously injured and other reports say a
16 person on the ground was killed. I am not sure which
17 is correct.

18 Another consideration is perhaps not so
19 relevant in this case with respect to military
20 operations where the pilot in some military aircraft
21 has the option of getting out of the aircraft if he
22 runs into a bird and the aircraft becomes
23 uncontrollable. There was an incident in Regina in
24 which a Canadian Forces training aircraft ran into a
25 duck and the pilots opted to stay with the aircraft and



1 not eject in that case. Apparently I understand to
2 reduce, to try and control the descent of this disabled
3 aircraft, and in the process those two Canadian Forces
4 pilots were killed as a result of the bird strike when
5 they could have abandoned the aircraft. They were
6 trying to prevent people on the ground from being
7 injured and in the process lost their own lives.

8 Q. Finally, Dr. Richardson, I wanted
9 to refer you to a letter from Transport Canada to
10 yourself, which can be found as Appendix 7 to your
11 witness statement. A letter dated December 17th, 1986
12 from Transport Canada. Can you tell us about the
13 context of that letter. There is a reference to a
14 telephone call. Did you call Transport Canada?

15 A. Yes. I called Mr. Paul McDonald
16 of Transport Canada who is the primary person there who
17 deals with bird strikes, with aircraft matters on a
18 country-wide basis to touch base with him about this
19 particular issue we are dealing with at this hearing.
20 I gave him some information about my understanding of
21 what was proposed and we discussed the matter and he
22 wrote this letter back to me.

23 Q. I wanted to direct your attention
24 in particular to the third paragraph and ask you
25 whether that preference which is expressed there, that



1 is when the selection of a landfill site includes
2 alternative sites that are further away from an
3 airport, Transport Canada would support a site further
4 from the airport which not create bird movement in or
5 near airport flight paths. Now that is a preference
6 which you yourself would support, everything else being
7 equal?

8 A. Yes, other things being equal,
9 that is certainly very much consistent with what I have
10 said earlier today. I would agree with that.

11 Q. Finally, the last paragraph on
12 that page, that during the selection of a landfill
13 site, the proponent should also consider future growth
14 at the airport. Change in aircraft usage or increased
15 flights can have an impact on flight safety of a
16 landfill located near an airport. Really, the first
17 two sentences. The future growth or changes in
18 operation are matters which I believe you yourself
19 referred to in your report?

20 A. Yes, and in my testimony this
21 morning.

22 Q. Then if we turn back to your
23 witness statement, the last page of it, page 16, we
24 referred to this previously, paragraph 8 from the
25 following perspectives, namely, public safety and



1 aerial navigation. I think you have told us now about
2 certain incidents on the ground relative to the public.
3 Was that something that would be within this definition
4 of public safety?

5 A. Yes, of course, but it also
6 includes the airborne public as well as the public on
7 the ground.

8 Q. With respect to the nuisance
9 impacts that could occur because of bird control
10 measures, I take it from what you said previously that
11 would refer basically to noise from various potential
12 dangers that you have talked about?

13 A. Yes, in certain circumstances
14 those could be concerns, yes.

15 Q. The public and private cost of
16 bird control measures, in your experience, I am not
17 sure whether you are in a position to put any numbers
18 on control measures, but for example, in the Niagara
19 Falls situation that you did a report on; can you give
20 us in a relative sense, does that appear to be
21 something, cheap or expensive, if you can use those
22 terms?

23 A. I can't give a very precise number
24 for that case as it is not a case that is directly
25 comparable to this anyway. Even a partial control



1 effort at that site involved the expenditure of, on
2 capital construction, let alone operation, of several
3 tens of thousands of dollars. I am also aware of what
4 the costs of some of the bird control contracts were at
5 the major airports that have bird control contracts in
6 Canada and we are talking about numbers ranging from
7 about \$80,000 to \$130,000-some odd a year in those
8 instances per airport.

9 MR. ESTRIN: Thank you, Dr. Richardson,
10 those are all my questions. You will have a few
11 others to answer, however.

12 MR. LANCASTER: I am sorry, I didn't
13 get your name, sir?

14 MR. GRIFFITHS: Griffiths is my name,
15 initials L. J.

16 MR. LANCASTER: Do you have any
17 questions?

18 CROSS-EXAMINATION BY MR. GRIFFITHS:

19 Q. Dr. Richardson, Exhibit N-340 is
20 also attached to your report as Appendix 2. This is
21 the land use in the vicinity of airports produced by
22 Transport Canada. If I could take you to part 3
23 entitled "Bird Hazards" in that particular document, in
24 paragraph (a) it states:

25 "Extremely hazardous land use



1 practices."

2 I take it that you will agree with me under the section
3 that these practices, starts:

4 "These practices are not recommended in
5 areas five miles or less from the
6 airport boundary and should be at an
7 even greater distance from food..."

8 And it lists food waste and landfill sites. You are
9 familiar with that policy I take it?

10 A. Yes, indeed.

11 Q. It is your opinion it should be
12 followed as a guideline?

13 A. From a bird hazard viewpoint, yes.

14 Q. I take it is also your position
15 that food waste landfill sites should be at an even
16 greater distance from an airport than five miles?

17 A. I would say that would depend on
18 the configuration of the location of the airport in
19 relation to the landfill site and water. In this case
20 because the landfill site would be on the inland side
21 of the Air Park, then indeed a longer distance would
22 certainly be in order, because regardless of the
23 distance the further inland the gulls are still going
24 to cross over the vicinity of the airport.

25 Q. That is an additional complicating



1 factor you have with respect to Site D?

2 A. That is correct.

3 Q. I would also like to take you, you
4 don't necessarily have to turn to this exhibit, it is
5 N-399. I can tell you it is a letter from
6 Mr. Binnie who is the Regional Director of Airports and
7 Properties for Transport Canada, a letter dated
8 February 1, 1984 and it attaches to it a guideline
9 entitled "Appendix G, Land Use in the Vicinity of
10 Airports and Bird Hazards". Are you familiar with
11 these guidelines?

12 A. I suspect what you are referring
13 to is part of the airport bird hazard control manual
14 which is a part of Mr. McDonald's witness statement.
15 That whole manual is there as one of the appendices.

16 Q. I take it you are familiar with
17 those guidelines?

18 A. Yes, I am.

19 Q. At that Appendix G, land use in
20 the vicinity of airports it states:

21 "The natural attraction of airports for
22 birds, i.e., role setting, clear level
23 ground and an accessibility of food,
24 water and nesting areas is difficult to
25 overcome except through rigid land use



1 controls to minimize these features."

2 Are you familiar with that?

3 A. Yes.

4 Q. Is it your evidence that that is
5 the best mitigation factor to take into account, that
6 is land use controls?

7 A. Well, that guideline is dealing
8 specifically with the attraction of the airport per se
9 for birds. Our concern here is primarily with the
10 attraction that will be caused by the landfill site and
11 so I have no quarrel with what it says there in terms
12 of reducing the attraction of birds to airports. Here
13 it is the land use practice with respect to something
14 off the site, off the airport site, namely the landfill
15 site that is the most concern.

16 Q. The final document I have is
17 entitled Exhibit H-14. It is a compilation of analyses
18 under the Walker, Wright, Young Associates Limited
19 cover. The particular report I am looking at is
20 prepared by Bird & Hale and it is Appendix C.

21 A. Unless it is part of the Bird &
22 Hale report that is Exhibit H-17.

23 Q. It isn't, and I am just going to
24 refer to one line from this report, and if you feel it
25 necessary to review this, by all means. I want to take



1 you and I will refer for the Board's purposes to page
2 C-16. At the bottom under "Conclusions" with respect
3 to Site D, the following is indicated:

4 "Land use conflicts should not develop
5 with regard to the presence of the
6 Burlington Air Park."

7 I take it you would express a disagreement with that
8 statement?

9 MR. LEDERER: Just a moment. To start
10 with, well "land use conflicts should not be
11 permitted".

12 MR. GRIFFITHS: It says "Land use
13 conflicts should not develop in the presence of an
14 airport."

15 MR. LEDERER: I am not sure this
16 gentleman is an expert in land use. What is land use
17 referred to. He has never seen this report before. It
18 is a comment that is being put to him out of context.
19 Land use by itself is a very general term. I am not
20 sure it is appropriate to put this question in this
21 fashion to this witness. I am not sure what is gained
22 by it.

23 MR. LANCASTER: I think it is a general
24 question, any land use conflict from any source
25 whatsoever.



1 MR. GRIFFITHS: I am not suggesting
2 this person is a planner and the weight of the evidence
3 should go to his planning ability. I am suggesting
4 that when it states "Land use conflicts should not
5 develop," Mr. Chairman, I am suggesting or asking the
6 witness whether this statement, in his expertise, would
7 he agree with it or disagree with it, as simple as
8 that.

9 MR. LEDERER: I want to formally object
10 to the question. I don't think he is qualified to
11 answer the question. What does he know about land use
12 conflicts. It is a much more general term. I am
13 sorry, I do make, for what it is worth, a general
14 objection.

15 MR. LANCASTER: You could reword your
16 question to get to the points you want to rather than
17 just land use conflicts.

18 DR. KINGHAM: For the benefit of the
19 witness, the specific quote that you are making,
20 Mr. Griffiths, is a corollary clause to the chapeau
21 sentence and I think the witness will have to know the
22 introductory sentence:

23 "The following conclusions can be drawn,
24 i.e., that land use conflicts should not
25 develop..."



1 It is a statement rather than a proposal as I read
2 this. Can you make that clear to the witness?

3 MR. GRIFFITHS: I suggest that is the
4 case.

5 Q. Might I suggest then that there
6 will be, in your expertise, can you tell us whether
7 there will be any conflicts that might develop because
8 of the installation of Site D as the landfill site with
9 respect to the Burlington Air Park?

10 A. With respect to the bird question,
11 which is all that I am here to address, there is no
12 doubt that changing that land use at Site D to being a
13 landfill site will greatly increase the attractiveness
14 of that site to birds and as we have discussed at
15 length, that will constitute an increase or cause an
16 increase in the bird hazard to aircraft, or aircraft
17 using the Burlington Air Park.

18 MR. GRIFFITHS: Thank you. Thank you,
19 Mr. Chairman.

20 MR. LANCASTER: Mr. Tidball, do you
21 have questions?

22 MR. TIDBALL: I have no questions,
23 Mr. Chairman, thank you.

24 MR. LANCASTER: Mr. Tzekas?

25 MR. TZEKAS: Mr. Chairman, Mr. Lederer



1 will proceed with the idea that it might again shorten
2 the time that I would spend.

3 MR. LEDERER: I am happy to hear
4 Mr. Tzekas say again because that seems to suggest we
5 have had some success in the past.

6 MR. LANCASTER: That's the right way to
7 think anyway.

8 CROSS-EXAMINATION BY MR. LEDERER:

9 MR. LEDERER: Mr. Chairman, if I may, I
10 had a wonderful Christmas. One of the results is that
11 I may ask you to adjourn early today to make sure I
12 have completed and just depending on how I do during
13 the rest of the afternoon.

14 Q. Sir, I am going to begin by asking
15 you a series of extremely general questions which are
16 designed to see whether you and I start in the same
17 position with respect to the larger problem here, which
18 is the matter of waste disposal, and I want you to know
19 that I understand that you are not an expert in that
20 area, and if for any reason you are uncomfortable with
21 any of those questions which I think are rather
22 general, I would have you say so and we will move on to
23 something else.

24 As a general proposition, are you
25 prepared to agree with me, sir, that as a society we



1 produce garbage, pretty easy?

2 A. That's pretty easy to agree with,
3 yes.

4 Q. Would you agree with me that we
5 appear to be producing it in rather significant
6 quantities?

7 A. Yes.

8 Q. Would you agree with me it has to
9 be disposed of somewhere?

10 A. Somewhere and somehow, yes.

11 Q. Do you understand, sir, or will
12 you accept from me that in this particular geographic
13 area it is the responsibility of my client, the Region
14 of Halton, to provide waste disposal facilities?

15 A. Yes.

16 Q. Now, will you agree with me as
17 well that in searching for a waste disposal facility,
18 in designing such a facility, there are a number of
19 issues raised both technical and social in their
20 origins?

21 A. I am sure that is true, yes.

22 Q. You would agree with, and again if
23 you are uncomfortable with any of this, say so. You
24 would agree with me there are a number of technical
25 areas that have to be considered, for example, areas of



1 hydrogeology which have to do with groundwater flow,
2 questions of hydrology which deal with surface water
3 flow matters of design, transportation, noise, dust and
4 biophysical questions, for example?

5 A. Without being an expert in most of
6 those areas, yes, I am sure that is true.

7 Q. Would you agree with me as well
8 that when we come to site the landfill, for example, as
9 matters presently stand, it is a land use which people
10 don't particularly like to have near them. You can
11 understand that, can you, sir?

12 A. Yes.

13 Q. Nonetheless, can you agree with me
14 at least insofar as Southern Ontario is concerned that
15 when it comes time to site such a facility there is
16 always going to be a potential for it to have some kind
17 of disruptive effect on somebody simply because this is
18 rather a subtle area generally?

19 A. I suppose, yes.

20 Q. Would you agree then, sir, that
21 when the authority that is responsible for providing
22 this service must look for a new site, it has to
23 consider all of these issues?

24 A. Yes, I am aware of that.

25 Q. You agree with me, sir, that the



1 approving authority and I want you to know that that is
2 my own term, the approving authority in this case, this
3 particular Board must consider those things as well?

4 A. I presume that to be true, yes.

5 Q. Would you agree with me, sir, that
6 it is unlikely that we are going to find the perfect
7 site, one which is not near anybody, yet is near the
8 waste that is produced and one that will not impact on
9 other land users in some fashion, one that is
10 reasonable by engineering, we are not likely to find
11 that perfect site?

12 A. Not being an expert it sounds to
13 be true, yes.

14 Q. So what we are really going to
15 have to do then is sort of balance out all the possible
16 deviations from perfection for a good site, hopefully
17 the best site; would you agree with that?

18 A. Well, I don't know how one defines
19 what best site is, but, yes ...

20 Q. My point is, we have to balance
21 the concerns and issues that are raised in the context
22 of the study?

23 A. No doubt.

24 Q. I suppose what you are telling us
25 here is that among the issues that will have to be



1 balanced is this matter of the potential for impact or
2 collisions between birds and airplanes?

3 A. Yes, sir.

4 Q. Now, before looking at the
5 substance of your work, I would like to see if I could
6 come to some understanding with you as to the bottom
7 line of where this fits in with the balance and what I
8 would like you to do with me, if you would, sir, is to
9 go to your report, this is your 1987 report and turn
10 with me, please, to conclusion 8, perhaps we could
11 start at page 13 at the bottom of the page. Are you
12 with me, sir?

13 A. Yes.

14 Q. Start with the sentence that
15 begins on that page and just runs briefly over to the
16 following page, page 14:

17 "Even so, the rarity of reported serious
18 collisions between birds and light
19 aircraft, despite the fact that airports
20 are often situated in areas with many
21 gulls, implies that a serious collision
22 is unlikely."

23 Do you see that?

24 A. Yes, I do.

25 Q. If we could then go to page 19 of



1 this same report, and to conclusion 8:

2 "The probability of a serious collision
3 of a bird and an aircraft from
4 Burlington Air Park will be increased
5 considerably by establishment of the
6 landfill. No numerical estimate of this
7 increase is possible. The rarity of
8 reported serious collisions between
9 birds and light aircraft, even though
10 birds often congregate near airports,
11 suggests that even after establishment
12 of the landfill, a serious collision
13 will be unlikely."

14 Do you see that?

15 A. Yes, I do.

16 Q. I take it, sir, that you agree
17 with it since you wrote it?

18 A. I did write it, and I do agree
19 with it.

20 Q. Page 19, conclusion 8. So, what
21 we see here then is that even with the landfill in
22 place, with the increases you predict, it would appear
23 that a serious collision is unlikely. That is your
24 conclusion?

25 A. A serious collision in the sense



1 that, one that will cause a human fatality is unlikely.

2 Q. If we can then sort of take that
3 and place it in the context of what I consider to be,
4 and I am happy to have you disagree with the term, your
5 ultimate conclusion. This is looking at page 16 of
6 your witness statement and what you are really telling
7 us is that on a comparison...

8 A. Yes.

9 Q. What you are really telling us is
10 that looking at the single issue of birds and bird
11 hazards, Site F is the preferred site?

12 A. That is correct.

13 Q. I presume you will agree that you
14 have not looked at the other factors that I reviewed
15 with you as matters that will have to be studied and
16 considered by those that bear the ultimate
17 responsibility?

18 A. That's right. I looked strictly
19 at the bird hazard to aircraft. My comments have all
20 been based on other things being equal. If you have a
21 choice in the bird hazard question you should go to the
22 site that is not going to cause the problem.

23 Q. Let us assume for the moment that
24 other things are not equal. Would you agree with me
25 that it is conceivable that when we come to put in the



1 balance the unlikely possibility of a serious
2 collision, and considering the other factor, it is
3 conceivable that this Board may, and I want you to know
4 that this is not the Region's position, but this Board
5 may decide that nonetheless Site D is the preferable
6 site?

7 A. I don't know the other matters
8 that you are dealing with and what their relative
9 evidence is on them. So I don't really think I can
10 answer that.

11 Q. I am just asking you in the
12 abstract, and I am not asking you to make an
13 interpretation of any evidence. Just in the abstract,
14 would you agree with me that when we come to balance
15 those things, it is possible, without knowing anything
16 about the evidence in theory, it is possible that the
17 Board may yet find that Site D is the preferable site?

18 A. If there were some obvious
19 overwhelming reason why the alternative site could not
20 be used, then I would assume that probably is correct.
21 But I have no information about the other factors that
22 have to be taken into account.

23 Q. We have a situation here where
24 it is possible Site D may be approved despite the
25 evidence you have given. Do you agree with that? That



1 is a possibility.

2 A. I suppose it is possible, yes.

3 Q. You understand that that is
4 something that would occur under the exercise of
5 balancing the various factors that need to be
6 considered by those again who have to consider
7 everything and not just one issue. Would you agree with
8 that?

9 A. Presumably they would consider all
10 the factors, yes.

11 Q. What I am suggesting to you, sir,
12 is that work is really, that conclusion is really
13 consistent with the work that you did in 1978. You
14 recall first of all Mr. Estrin referred you to that
15 report?

16 A. The report I prepared in 1978?

17 Q. Yes.

18 A. Yes, I certainly recall that work.

19 Q. And part of that work is appended
20 to the 1987 report which has been exhibited here. As I
21 understand it, sir, that report was prepared for the
22 Region of Halton?

23 A. Through their engineering
24 consultant, yes, it was.

25 Q. Mr. Estrin asked you this morning,



1 you were called to give evidence on behalf of the
2 Region at that time?

3 A. Yes, I did.

4 Q. At that time, sir, you concluded
5 that the possibility of an accident or serious
6 collision with a bird, between a bird and a plane, was
7 unlikely. A similar conclusion to the one you made
8 this morning?

9 A. Yes, a similar conclusion, but
10 some differences in the details.

11 Q. You talked about those and we will
12 come to deal with them. My point was that at that time
13 you found there was going to be an increase in birds as
14 you found now?

15 A. Yes.

16 Q. You found that for the possibility
17 despite that of an increased potential for collisions
18 was possible?

19 A. I said the likelihood of a serious
20 collision was a possibility.

21 Q. The best way to review that, sir,
22 is for me to refer to the conclusions of the report,
23 and I don't have another copy. I erroneously thought
24 that Mr. Estrin would file it. That is my error, not
25 his.



1 MR. ESTRIN: Before we proceed I would
2 like an opportunity to find my copy.

3 MR. LEDERER: Q. Before we proceed, can
4 we go to recommendation No. 1?

5 A. Which page is that?

6 Q. It is page II.

7 A. Right.

8 Q. No. 1 is the proposed landfill
9 site of Northern Burlington is almost sure to attract a
10 large number of gulls, hundreds, occasionally over a
11 thousand on a daily basis through much of the area
12 especially in the summer. Do you see that?

13 A. Yes.

14 Q. I think virtually the same wording
15 as used in conclusion 1 of the present report, we also
16 look at conclusion 2:

17 "The majority of these gulls will fly
18 over Burlington Air Park or through its
19 approach and climb-out paths at
20 altitudes of 25 to 500 feet at least
21 twice a day. Some may land on or near
22 the airport. Aircraft from that airport
23 will occasionally encounter gulls at
24 altitudes of 1000 feet above ground
25 level during flying over or near the



1 landfill site."

2 Do you see that?

3 A. Yes, I do.

4 Q. It is also very similar to the
5 conclusion you drew in your present report?

6 A. With differences in details again.

7 Q. Having to do with the distance of
8 the two landfills from the Burlington Air Park?

9 A. Correct and as well with
10 differences in the gulls in the area and operations at
11 the Air Park.

12 Q. No. 6 then:

13 "The probability of a collision of a
14 bird and an aircraft over Burlington Air
15 Park will be increased considerably by
16 the establishment of a landfill. No
17 numerical increase is possible from
18 existing data, the rarity of reported
19 serious collisions between birds and
20 light aircraft even though birds
21 congregate near the airport suggest that
22 after the establishment of a landfill a
23 serious collision will be unlikely."

24 Do you see that?

25 A. Yes. You skipped a couple of



1 words, but I see that.

2 Q. I didn't mean to skip a couple of
3 words, and if I did they weren't critical. My point
4 here, sir, is that at that time you came to give
5 evidence on behalf of the Region knowing the Region was
6 seeking the approval for the landfill you were
7 examining at that time?

8 A. Yes.

9 Q. And you accepted the possibility
10 then that that landfill would be approved?

11 A. I don't think it was a matter of
12 me accepting it or not. I was asked to give my views
13 as to the bird hazards if that site was established and
14 I did so.

15 Q. You didn't come here to give
16 evidence before the Board and say that no landfill
17 should be established as a result of your work, did
18 you?

19 A. I don't recall whether I made that
20 statement or not. I doubt that I would have made it so
21 explicitly.

22 Q. Shall I read you how the Board
23 interpreted your evidence. Perhaps you can tell me,
24 sir, whether it is an accurate recollection.

25 Mr. Chairman, this is the decision and this has been



1 referred to a number of times in the course of this
2 hearing.

3 "At the hearing..."

4 Do you have a copy of that, Dr. Richardson?

5 A. I probably do. Just a moment.

6 Yes, I do.

7 Q. "At the hearing, Dr. Richardson
8 explained his report, Exhibit No. 90 on
9 this point saying that while the
10 location of the landfill at Site F would
11 increase the hazard rating of the
12 airport, the risk of an accident due to
13 the presence of birds at that airport
14 was still no higher than a mere
15 possibility."

16 Do you see that?

17 A. I do see that in the decision of
18 the Board.

19 Q. Is that consistent with the
20 evidence you gave at that time?

21 A. I believe not. I in fact wrote a
22 letter to M. M. Dillon, the engineering consultant for
23 the Region in relation to the Board's decision overall,
24 and specifically with respect to that quote that you
25 just read out. My response to that was, that I



1 actually stated that the risk of serious collision,
2 i.e., one causing serious human injury or a fatality
3 was unqualifiable but probably not high. The risk of
4 minor collisions, some of which would involve damage to
5 an aircraft would be much higher. I am sure I did not
6 discuss the probability of a serious collision as
7 remote, as in line 7 of this paragraph.

8 Q. But the point was, sir, you did
9 not go to the Board regardless of that. You did not go
10 to the Board and say we cannot have a landfill here.
11 You came and gave your evidence and indicated there was
12 a slight possibility, a possibility of an increase and
13 recognized it was possible that a landfill could be
14 located, correct?

15 A. There are a couple of parts to
16 your question. I think I stated it more explicitly, my
17 concerns than you just summarized, but I think it is
18 correct that I did not outright say under no
19 circumstances should a landfill site be put at this
20 location.

21 Q. Which takes us to this point that
22 under certain circumstances given that there is an
23 increased risk, but nonetheless there is a risk which
24 may for a number of reasons be acceptable, a risk that
25 we are prepared to live with and allow a landfill near



1 an airport?

2 A. Well, I think, based on the
3 situation in many places that is common. Landfills
4 near airports, if there are alternatives as we
5 discussed at some length, then those alternatives
6 should be very seriously considered in place of
7 purposely establishing a situation that one knows is
8 going to increase the danger to the people in the air
9 and on the ground.

10 Q. So, where things are not equal it
11 may be that this is a danger or a risk at some level
12 that is accepted and acted on by those who are
13 responsible in this area and you understand that?

14 A. Yes, the facts show that that does
15 happen.

16 Q. Is it fair to say then, sir, is
17 it, that in the circumstances that confronted you in
18 1978 you were prepared to see a landfill. You were
19 prepared to accept that a landfill might be located in
20 the area marked as "E" on Exhibit H-274?

21 A. I don't think I considered that
22 question. That was not my responsibility. I was
23 merely asked to give evidence as to my opinion as to
24 how they would involve an aircraft if that decision was
25 taken. I indicated very definitely it would increase



1 the danger to aircraft at Burlington Air Park.

2 Q. At least then you have accepted or
3 agreed with me that in some circumstances there has
4 been a historical use of an acceptable degree of risk.
5 I would also like to try to confirm this view that we
6 can have landfills and we do have landfills close to
7 airports by reference to Dr. Solman. You indicated
8 that you were familiar with Dr. Solman?

9 A. Yes, I am.

10 Q. In fact you have referred to him,
11 referred to something which he said in your evidence
12 and at Tab 6 of your witness statement?

13 A. I will have to check what Tab 6
14 is, but I certainly refer to him, yes.

15 Q. In fact you have referred to some
16 of his reports in your literature searches, both now
17 and in 1978?

18 A. I certainly have now and I presume
19 I did in 1978. I would have to check to make sure.

20 Q. You indicated you had done some of
21 your research with respect to the associated committee
22 on bird hazards?

23 A. The associated committee on bird
24 hazards to aircraft which was, a primary member of
25 which was the National Research Council.



1 Q. If I remember Dr. Solman was the
2 chairman of that committee?

3 A. For part of its period of
4 existence, yes.

5 Q. He in fact has been working in
6 many countries in Europe and throughout the world with
7 respect to this problem?

8 A. In many countries including
9 Europe.

10 Q. In fact also in your evidence you
11 referred to the decision of this Board or rather the
12 Environmental Assessment Board with respect to the
13 Quinte case which took place in the summer of 1987?

14 A. Yes.

15 Q. I therefore presume, sir, that
16 having quoted from Dr. Solman you would be prepared,
17 having recognized he was an expert in this field you
18 would be prepared to accept most or all of what he says
19 about this problem in the area generally?

20 MR. ESTRIN: Let's have a question and
21 then an answer.

22 MR. LEDERER: Q. Do you accept him as
23 an authority?

24 A. I accept him as an authority. I
25 would not pre-judge the situation by saying I agree



1 with everything he says.

2 Q. You would accept his opinion as
3 the opinion of a recognized authority in this area?

4 A. Yes, he is a recognized authority
5 in the area. I might or might not accept any particular
6 opinion.

7 Q. I would like to read to you, sir,
8 what he said in the course of that hearing at page
9 4151:

10 "Q. It is your view landfills near
11 airports should be shut down?

12 A. Shut down or operated in such a
13 way that they cease to cause a bird
14 hazard.

15 Q. So landfills can be operated in
16 such a way to sufficiently reduce bird
17 hazards, is that correct?

18 A. They can, be correct.

19 Q. This site could be just like any
20 other?

21 A. I would have to say yes."

22 Now, first of all, do you understand that to be an
23 opinion of Dr. Solman that I read to you from the
24 transcript. Do you understand it?

25 A. I understand that to be an excerpt



1 from a lot of things that he said, yes.

2 Q. Are you familiar with the
3 situation concerning the landfill and the Canadian
4 Forces Base in Trenton?

5 A. In a general way. I have visited
6 the Canadian Forces Base Trenton, I am not specifically
7 looked at the landfill. I have read various documents
8 relating to that problem, however.

9 Q. If I were to tell you and I will
10 give you the transcript if you think it is necessary.
11 The landfill in that case is directly at the end of a
12 runway, approximately one-half mile or one to two
13 kilometres from the end of the runway. Are you
14 prepared to accept that. Do I have to show you the
15 transcript?

16 A. That is my general understanding
17 at Canadian Forces Base Trenton.

18 Q. We can agree it is closer than the
19 proposed landfill in this case?

20 A. I believe that is the case, yes.

21 Q. We can agree that it is in the
22 flight path of airplanes simply because it is directly,
23 in a direct line from the end of the runway?

24 A. I believe it is pretty close to
25 being in a direct line.



1 Q. As well, sir, have you done any
2 studies, you didn't say this morning if you had done
3 any study or made any inquiries as to the number of
4 airplane movements which take place at the Burlington
5 Air Park in a year?

6 A. I tried to obtain that
7 information. It is my understanding that there is no
8 direct count of the number of aircraft movements at
9 Burlington Air Park. Transport Canada has a
10 publication which has made an estimate of that based on
11 some figures on the number of hours flying,
12 instructional flying primarily at Burlington Air Park
13 and they have a procedure, the details of which I am
14 not familiar with, but they have used to make an
15 estimate of the probable number of approximate
16 movements.

17 Q. Do you know what that number is?

18 A. The number that I have seen for
19 1983, counting all the various types of movements, was
20 estimated to be 58,000 movements and there is a further
21 estimate for 1986 of approximately 80,000 movements. I
22 have no basis for knowing whether or not those numbers
23 are correct. They are estimates, they are not counts.

24 Q. As I understand a movement to be
25 either a landing or a take-off, is that your



1 understanding of movement?

2 A. Yes.

3 Q. Now, will you agree with me that
4 the airport at Trenton, CFB Trenton, is larger than the
5 Burlington Air Park?

6 A. It is much larger and services a
7 very different type of aircraft. In terms of the
8 number of movements I don't recall the exact number of
9 movements at CFB Trenton.

10 Q. If you want to review the number
11 of movements at CFB Trenton let me first of all show
12 you what you have in your statistics and then if
13 necessary I will refer you to some evidence which was
14 given in the Quinte hearing. If you go to page 2
15 behind Trenton Airport at Tab 1, you will see there a
16 list of the movements ranging from about 31,000 up to
17 46,000. Do you see that?

18 A. Yes.

19 Q. Let me ask you does it make any
20 sense to you to suggest that there would be more
21 movement at the Burlington Air Park than at the CFB
22 Trenton?

23 A. It is not particularly surprising
24 to me. They are very different types of operations.
25 The Burlington Air Park includes a high proportion of



1 flying by student pilots in which they are just
2 practicing take offs and landings over and over again.
3 That adds up to a very large number of movements by
4 what the definition of a movement is, this adds up
5 quite quickly. Of course that is not the kind of
6 flying that is done at CFB Trenton.

7 Q. If I were to tell you that
8 evidence at the Quinte hearing was that Air Canada uses
9 CFB Trenton precisely for that purpose would that
10 surprise you?

11 A. It does not surprise me that you
12 might have some training flights there. I would be
13 extremely surprised if you could show me any
14 information that suggested that the number of training
15 movements that Air Canada would have at CFB Trenton was
16 in any way comparable to the numbers at Burlington Air
17 Park.

18 Q. If I were also to tell you that
19 the evidence of the staff officer for flight safety
20 from transport group headquarters at CFB Trenton gave
21 evidence to suggest that the number of flight movements
22 in 1986 at the Trenton Air Force Base was 86,803.
23 Would you have any reason to disagree with it? For the
24 purposes of this would you be prepared to accept this
25 as more accurate than information received from



1 Transport Canada?

2 A. I have no information about the
3 ways in which those counts may have been obtained.
4 Really the relevant accuracy of the two. The statistics
5 that are quoted here in Appendix 1 to my witness
6 statement come from Transport Canada's compilation of
7 data.

8 Q. So the situation that we have,
9 first of all, just by way of comparison is that we have
10 a larger airport dealing, as you said, with a different
11 kind of aircraft and we will get to that in a moment,
12 at Trenton. We have a landfill which is in place and
13 has been in place for some time which is more or less
14 directly in line with the runway and is somewhat closer
15 than the proposal here, would you agree with that?

16 A. Yes.

17 Q. With respect to the aircraft, do
18 you know what a CC109 Cosmopolitan is?

19 A. Yes, I do.

20 Q. Is that a turboprop plane?

21 A. Yes, it is.

22 Q. Do you know a CF113 search and
23 rescue aircraft is, Voyager Labrador?

24 A. CH113, that is a twin engined
25 medium size helicopter, yes.



1 Q. Do you know what a CC115 Buffalo
2 DeHavilland is?

3 A. Yes.

4 Q. Is that a turboprop plane as well?

5 A. Yes, it is.

6 Q. Do you know what a CC130 Hercules
7 is?

8 A. Yes.

9 Q. Would you agree it is a turboprop
10 as well, it is a rather large transport plane isn't it?

11 A. A moderate size transport plane.

12 Q. Do you know what a Boeing 707 is?

13 A. Yes.

14 Q. That's a pure jet, isn't it?

15 A. A type of jet aircraft.

16 Q. A Challenger, a CC144, that is
17 also a pure jet?

18 A. Yes.

19 Q. I actually have some pictures,
20 Mr. Chairman. I apologize I only have one copy
21 because these actually were exhibited at the Quinte
22 hearing and these are my copies from the Quinte
23 hearing.

24 MR. ESTRIN: Can I see them first
25 please?



1 MR. LEDERER: Sure. These are standard
2 photographs supplied by CFB Trenton.

3 MR. ESTRIN: I don't know what they are.
4 I wasn't advised.

5 MR. LEDERER: Q. My point being of
6 course -- first of all would you accept that these are
7 the kinds of planes that are used at CFB Trenton?

8 A. Those are many of the kinds of
9 planes used at CFB Trenton. There are others.

10 Q. These are pure jets or turboprop
11 aircraft?

12 A. The majority would be.

13 Q. Therefore, given what you have
14 said about the fact that these are the planes which
15 have a higher risk of collision with birds, that would
16 present a larger problem since for that reason alone
17 they are the kind which have or are more susceptible to
18 that kind of collision.

19 A. They are more susceptible in some
20 cases to damage from collision.

21 Q. Okay. So can we agree then, given
22 the various facts, the location of the landfill, both
23 in terms of its distance from the airport and its
24 position with respect to the runway, the kinds of
25 aircraft that are being used here and assuming for the



1 moment movements in the area of 86,000 rather than
2 53,000. There seems to be a greater risk of a serious
3 collision at CFB Trenton than there would be at the
4 Burlington Air Park if the landfill were opened at Site
5 D?

6 A. I am not prepared to make that
7 blanket statement. I think there are several other
8 factors that would need to be taken into account
9 including the fact that at Trenton the landfill site is
10 not on the inland side of the airport. The fact that
11 the pilots who are using CFB Trenton are, for the most
12 part, highly experienced pilots in contrast to the
13 student pilots or a high proportion of pilots using
14 Burlington Air Park.

15 They are very different situations and
16 difficult to compare. I would not, I would not contest
17 the fact that birds are a serious problem at CFB
18 Trenton. As I have already said, birds could be a
19 serious problem at Burlington Air Park if Site D is
20 established.

21 Q. You are not prepared to say that
22 the risk is greater at Trenton, but you do agree there
23 is a serious risk there. Can we now go back to the
24 quotation from Dr. Solman which I read to you in which
25 he said, and I will read it again if you wish. My



1 understanding is he indicated that that -- let us just
2 read it. I will remind the Board that this is page
3 4151 of the transcript:

4 "Q. Is it your view landfills near
5 airports should be shut down?

6 A. Shut down or operated in such a
7 way that they cease to cause a bird
8 hazard.

9 Q. So landfills can be operated in
10 such a way to sufficiently reduce bird
11 hazards; is that correct?

12 A. They can be, correct.

13 Q. This site could be just like any
14 other?

15 A. I have to say, yes."

16 Do you agree with me that what Dr. Solman is saying is
17 that in his opinion it is possible that landfills can
18 be operated in a way to sufficiently reduce bird
19 hazards with respect to aircraft and that he is
20 specifically saying that can be done in regard to CFB
21 Trenton?

22 A. I don't think a yes or no answer
23 is warranted on that point. Dr. Solman made the case
24 at that hearing very strongly and repeatedly that by
25 far the best approach is to have the landfill site



1 closed or have a landfill site somewhere else. He made
2 the case repeatedly that any of these control measures,
3 the ones that you are alluding to in that quote are
4 ones that are fallible and depend on the actions of
5 humans that are not likely to be maintained in a
6 perfect way over the lifetime of a landfill site and if
7 there is any possibility of avoiding having a landfill
8 site in that situation, as far as I know, there seems
9 to be in the case of Halton Region, then that is by far
10 the preferable route to go.

11 Q. I didn't ask you what was the
12 preferable way to go, sir, and I didn't ask you for
13 your view of everything that Dr. Solman said or didn't
14 say in that hearing; I asked you for your understanding
15 of that particular serious of questions and answers
16 that I read to you.

17 Would you agree with me that what Dr.
18 Solman is saying is that after all the assessment of
19 the risk, after all the assessment of the mitigation
20 that is possible, it is conceivable, it is possible for
21 landfills and airports to be operated in conjunction
22 with each other in a manner which will sufficiently
23 reduce the bird hazard. He may not prefer it but it
24 can be done.

25 A. In theory it might be possible to



1 do it if a whole bunch of improbable events took place.

2

3 Q. Let me read you the question
4 again:

5 "Landfills can be operated in such a way
6 to sufficiently reduce bird hazards,
7 is that correct?

8 A. They can be, correct."

9 There is nothing in there qualifying in there about it
10 being in theory, there is nothing in there qualifying
11 it about being in the abstract or an improbable event.
12 Will you agree with me, sir, what Dr. Solman is saying
13 is that it can be done to a sufficient degree of risk.
14 He may not prefer it, again I accept that, but it can
15 be done.

16 MR. ESTRIN: Mr. Chairman, before the
17 witness answers a question it is getting repetitive and
18 in fact I think the witness did give a fair response.
19 If one reviews the transcript, this is the last thing
20 Mr. Lederer asked Mr. Solman after I don't know how
21 many days, but at least a full day of cross-examination
22 and a review of the transcript would indicate that Dr.
23 Solman's evidence was, contained many of the things the
24 witness has already said in reply to Mr. Lederer. So
25 that this quotation has to be understood to be after



1 all that has occurred, the last thing before Mr.
2 Lederer sat down.

3 MR. LEDERER: First of all I want the
4 Board to know that Mr. Estrin spoke a little too
5 quickly about the length of that cross-examination. I
6 guess that happens when you are somewhere and the other
7 person wasn't. This is not a full day's cross-
8 examination. Certainly, sir, it may be repetitive but,
9 sir, this is cross-examination and I get to repeat the
10 question, I get to ask it again and I get to change the
11 tone of my voice, I get to move around. That is what
12 cross-examination is about.

13 Finally, yes it was the last thing I
14 said and that is what makes it important. It is the
15 ultimate conclusion. If you really want to dissect the
16 question as Mr. Estrin implies you ought to do. Let us
17 look at the first question:

18 "Q. Is it your view that landfills
19 near airports should be shut down?"
20 What that asks for is an answer, if anything, yes.
21 Yes, you should shut them down. If what this gentleman
22 says is correct, it ought to be what we would expect
23 Dr. Solman to say but it is not what he said, what he
24 says is:

25 "Shut down or operated in such a way



1 that they cease to cause a problem."
2 Now with the greatest of respect we can get into a lot
3 of argument about what all this means. Mr. Estrin has
4 the right of reply if he wants to go back and try and
5 tear this cross-examination apart. Let him try and do
6 it. This is fair cross-examination and I have a right
7 to have the witness answer it not in some kind of
8 discourse about what he thought Dr. Solman might have
9 said, but in a direct fashion in response to this
10 question. The reason I have it that way is not because
11 of something I did, but because of what Mr. Estrin did.
12 I didn't raise Dr. Solman's evidence in this case. Mr.
13 Estrin did. He has filed with you three pages of
14 transcript and asked you to consider that as having
15 some relevance. Having done that I get to do this my
16 way.

17 With the greatest of respect the
18 objection is improper and I have a right to have this
19 question answered.

20 MR. LANCASTER: Continue, yes, you do.

21 MR. LEDERER: Q. Will you answer the
22 question as I put it to you. After all of my cross-
23 examination, just as Mr. Estrin says, at the end of the
24 day, recognizing he doesn't prefer it, Dr. Solman is
25 prepared to recognize that airports and landfills may



1 be operated in conjunction with each other in a manner
2 which is sufficiently safe. There is some risk,
3 certainly.

4 A. I would agree that he did not put
5 the word, he apparently said what you read out. I
6 wasn't there. He did not put the word theoretically
7 possible to be operated. Based on all the other things
8 he said in that transcript I am sure, but given the
9 opportunity to rewrite it he would prefer to put that
10 word in there.

11 Q. Now that he has had your help.

12 A. I don't think he needs my help.

13 Q. What I am suggesting to you, sir,
14 is not that Dr. Solman thinks this is the best way to
15 go. What Dr. Solman is doing is something that you
16 have done. You recognized that when all other things
17 are not equal this is something that we may yet have to
18 do, locate landfills in conjunction with airports.
19 There is a degree of risk that we may have to or may be
20 prepared to accept. You agree with that don't you,
21 sir?

22 A. Historically that has happened,
23 yes.

24 Q. Dr. Solman obviously agreed with
25 that, do you agree with that quote I read you?



1 A. Well, I really don't think I
2 should try and conclude what Dr. Solman's overall views
3 are on that.

4 Q. Now, what I want to do then, I
5 think you agreed with me, at least there is some
6 acceptable level of risk. What I want to do is
7 something you didn't do this morning. I want to spend
8 some time looking at the nature of the risk here. We
9 have already got some indication from you that a
10 serious collision is unlikely. I want to look at this
11 in some more detail.

12 First of all can we agree that the risk
13 of aircraft colliding with birds is not a problem that
14 is unique to the Burlington Air Park?

15 A. Yes, that's certainly true.

16 Q. Do we agree that this happens at a
17 great many airports?

18 A. Aircraft do collide with birds at
19 many airports, yes.

20 Q. By way of example, can we look at
21 Tab 6, I think this is of Mr. McDonald's witness
22 statement. No, I am sorry, this would be of your
23 witness statement -- I take that back -- it is
24 Mr. McDonald's.

25 Now, sir, Mr. Griffiths referred you to



1 this a few moments ago. Or rather no -- you have been
2 referred to the document at Tab 7. Are you familiar
3 with this document at Tab 7, the manual of bird hazard
4 control?

5 A. Yes, I am.

6 Q. This is a guideline published by
7 Transport Canada dealing with bird hazards at airports?

8 A. Yes.

9 Q. This is one place where you will
10 find documented for you the notion of a guideline of 8
11 kilometres distance from an airport or certainly the
12 kind of land uses that can be constructed within 5
13 kilometres?

14 A. 8 kilometres for land use is the
15 figure.

16 Q. What I would like to do is return
17 you to Appendix D and I want to tell you my copy of
18 this, as given to me, the orders in which I find the
19 pages have absolutely nothing to do with their proper
20 order. If you take a moment and you will find it is
21 both in French and English. You will find at the
22 beginning and get so you can look at pages D1, D2 and
23 D3, and D4.

24 DR. KINGHAM: Can you help us with this?
25 You are at Tab 6 or Tab 7?



1 MR. LEDERER: Tab 6.

2 Q. Do you have that?

3 A. I have Appendix D. There seems to
4 be some confusion.

5 Q. I counted up the number of
6 airports here and there are 73. If you want to count
7 them, go ahead. There are four pages, three with 20 a
8 page and one with 13.

9 A. It looks like a reasonable
10 approximation anyway.

11 Q. Do you agree with me there are a
12 varied number of bird strikes at each -- sorry -- you
13 haven't used that term. I gather bird strike is the
14 technical term for a collision between a bird and an
15 airplane?

16 A. I don't know whether it is a
17 technical term or a jargon term.

18 Q. A jargon term. In any event, will
19 you agree with me, sir, that if you review these you
20 will see there is a varying number of bird strikes
21 according to me from one to 336 per airport, if you
22 look at the total figures and of course they have been
23 spread out?

24 A. The 336 at some airport must be
25 over a multi-year period.



1 Q. Yes, it is. It is the total for
2 those years shown. It is the total for Vancouver as a
3 matter of fact.

4 A. Yes, I do see that line.

5 Q. Will you also agree with me, sir,
6 that this listing here does not refer to the Toronto
7 Island Airport which you have referred to?

8 A. I believe that is correct, but I
9 would have to go through all 73 lines.

10 Q. Perhaps you will accept that from
11 me. Will you agree that the Trenton Airport CFB is not
12 referred to either?

13 A. I don't know.

14 Q. I give you Buttonville near
15 Toronto, check with those three?

16 A. They are not here.

17 Q. My point being very simply we can
18 agree this is not a comprehensive list in any way of
19 the airports in Canada at which bird strikes have taken
20 place?

21 A. That must be true.

22 Q. In fact it is fair to say that
23 there are throughout this country many smaller airports
24 like Burlington Air Park which are simply not recorded
25 here at which bird strikes take place from time to



1 time?

2 A. Yes.

3 Q. I beg your pardon?

4 A. Yes.

5 Q. Fine. To put it as simply as I
6 can, what we learn from this is that the problem of
7 collisions between airplanes and birds is not an
8 uncommon problem insofar as airports are concerned?

9 A. It is unfortunately all too
10 common.

11 Q. Are you prepared to agree with me
12 that many of these airports at which there is this
13 problem occurs do not have the landfill associated with
14 them?

15 A. I have not reviewed this whole
16 list of airports and you would have to define what you
17 mean by associated, but certainly there are some
18 airports that are known to have landfills closely
19 associated with them that cause problems and there are
20 others that are not widely recognized to have such
21 specific landfill problems.

22 Q. Let me read you a question which I
23 put to Dr. Solman. I don't want to suggest it is
24 precisely the same question I put to you because it
25 isn't. This is at page 4000 of the transcript.



1 "Q. Thank you, sir. Now, can we agree
2 that the problem does exist at airports
3 that don't have landfills. Can we
4 assume that?

5 A. Yes, we can."

6 Do you agree with that? That
7 collisions, interactions between birds and airplanes
8 occur at airports that don't have landfills is part of
9 the problem?

10 A. Where there aren't landfills
11 within 5 miles -- yes, there are other reasons why
12 birds will get into collision with aircraft.

13 Q. Would you agree with me that this
14 problem exists at most airports?

15 A. Well, there are birds in the
16 vicinity of almost any airport that you might choose.
17 The degree of hazard and the number of birds in the
18 area is extremely wide and variable.

19 Q. I agree with that. I am not
20 arguing with that. The point is that birds are near
21 all airports and therefore the potential problem exists
22 at all airports.

23 A. From a practical viewpoint the
24 experience shows that there are some airports where
25 bird strikes are exceedingly rare, if they are



1 documented at all, and of course there are others that
2 have large numbers as this table shows.

3 Q. You agree with me that the vast
4 majority of airports need to be concerned about this in
5 varying degrees?

6 A. Yes, it should be taken into
7 account as a possibility at all airports.

8 Q. In fact just to look at your
9 report it appears that many airports are located in
10 areas where gulls are found. That's on page 13 of your
11 report. Do you agree with that?

12 A. As a generality that is true.

13 Q. Which augments or increases the
14 possibility of this problem occurring?

15 A. The problem of bird strikes, yes,
16 exactly so.

17 Q. So when we look then at the nature
18 of the risk arising from the siting of Site D in this
19 location one of the things we need to do is to assess
20 the problem if we are adding to the problem and in
21 order to do that would you agree with me it is fair to
22 say again that you have to consider the fact that after
23 all this possibility exists at a great many airports
24 some of which do not have landfills within five miles
25 of them?



1 A. The possibility of bird strikes
2 exists at a great many airports regardless of the
3 presence or absence of landfills. The presence of
4 landfills, however, is uniformly agreed to be one of
5 the, if not the greatest single contributor to risk.

6 Q. Sir, I understand your position
7 with respect to landfills and I am sure the Board does,
8 and you can repeat it as often as you like, but what I
9 would really want right now is just an answer to my
10 very simple question which is: when we assess the
11 nature of a risk one of the things you need to do is
12 look at the potential of the occurrence you are
13 concerned about not just in the particular case but in
14 general. Would you agree with me here that means you
15 need to look at the fact this problem does exist or
16 this potential risk exists at a great many airports,
17 some of which do not have landfills nearby.

18 A. Yes, and as I have already said
19 all those airport operators should do what is possible
20 to try and reduce those risks.

21 Q. So what we have is a problem which
22 is not uncommon but occurs in most airports, sorry,
23 many airports, some of which don't have landfills
24 associated with them. Can you now agree with me, I
25 think you have said this, there are lots of birds in



1 this area, lots of gulls for example, the area
2 surrounding Site D. We have talked about Toronto.
3 You have talked about Toronto and Hamilton Harbour. We
4 looked at your report there, the discussion of the
5 Great Lakes generally and other places. Would you
6 agree with me that there are a lot of birds around
7 here?

8 A. There are a lot of gulls in
9 western Lake Ontario region which go to various
10 specific inland sites depending on the availability of
11 food.

12 Q. So will you agree with me then
13 that there is at least a possibility even without this
14 landfill that a collision or a series of collisions
15 between birds at the Burlington Air Park and airplanes
16 landing or taking off from that Air Park could take
17 place?

18 A. Certainly that is a possibility.
19 As I testified, there is evidence of a couple of
20 collisions having occurred.

21 Q. So when we look at the degree of
22 risk the other thing we need, caused by the siting of
23 this landfill, one of the things we need to look at and
24 consider, when we consider your term of the
25 unlikeliness of a serious collision, that that risk may



1 exist already or the potential for it. In other words,
2 if I may put the question simply, we are not starting
3 at ground zero. It is not that there is no likelihood
4 present right now. There is a likelihood present right
5 now.

6 A. I agree there is a low possibility
7 right now, not a zero one and it would certainly
8 increase the frequency of collisions later if the
9 landfill was established.

10 Q. But with this, as you say,
11 considerable increased possibility, you are still left
12 with the unlikely possibility of a serious collision.

13 A. The unlikely possibility of a
14 serious collision, but not at all an unlikely
15 possibility of collisions any one of which
16 unpredictably can be serious.

17 Q. Can we agree that landfills are
18 not the only thing that bring birds to a particular
19 area?

20 A. Yes, that is true.

21 Q. The first thing that one would
22 start with presumably is water, birds, gulls at least,
23 frequent water?

24 A. Much of the time, yes.

25 Q. The first thing you would look for



1 in terms of whether there are going to be birds in
2 proximity of an airport would be water; agreed?

3 A. The first thing you look for in
4 terms of large numbers of gulls, is large bodies of
5 water, large lakes.

6 Q. There is a large body of water
7 near this Air Park?

8 A. In the sense of Lake Ontario being
9 several miles away.

10 Q. Yes. Exactly so. Now, in fact
11 what happens as I understand it is, you get water
12 bringing the birds if you like to the area. They may
13 find some food in the water, fish and such, but they
14 also fly inland to find other sources of food.

15 A. At many times of the year but not
16 all.

17 Q. Can we agree that in moving to
18 find food, birds can find food in locations other than
19 landfills?

20 A. Gulls and other birds, we are
21 mainly talking about gulls, do often find food in
22 places other than landfills, although landfills are the
23 most predictable places inland to find concentrations
24 of gulls.

25 Q. So when we consider this problem



1 it is fair to say, isn't it, that we don't just look at
2 landfills, we have to look at other potential
3 attractors of birds, if I can use that term. Is that
4 fair to say?

5 A. If there is some other attractor
6 that causes a much larger, an appreciably larger number
7 of gulls in one area then certainly that should be
8 taken into account.

9 Q. Can we agree and perhaps the best
10 way of doing this is to return to Tab 6 of Mr.
11 McDonald's witness statement and if you just turn with
12 me, sir, to page G1, do you have that sir?

13 A. G1.

14 Q. It is entitled "The Land Use in
15 the Vicinity of Airports/Bird Hazards." Do you see
16 that?

17 A. Yes.

18 Q. I would like to read you the
19 second paragraph:

20 "The natural attraction of airports for
21 birds, i.e., rural setting, cleared
22 level ground, and accessibility of food,
23 water and nesting areas, it is difficult
24 to overcome except through rigid land
25 use controls to minimize these



1 features."

2 Do you see that?

3 A. I do.

4 Q. Would you agree that what that is
5 telling is that airports themselves that can be
6 attractors of birds?

7 A. As well as any other inland
8 agricultural area that would also meet those
9 requirements.

10 Q. I will come and deal with
11 agricultural areas in a moment.

12 A. Airports are not at all unique...

13 Q. Airports themselves, for those
14 reasons which may be consistent and coincident with
15 other uses in the area will attract birds?

16 A. Sometimes.

17 Q. So without this landfill, assuming
18 for a moment, we know that we have an airport here that
19 itself may be an attractor for birds, correct?

20 A. I would not agree that it is
21 necessarily any more attractive than any other
22 agricultural or other open area in that vicinity, but I
23 would agree that gulls certainly could even in the
24 absence of a landfill site occur at Burlington Air Park
25 from time to time as they could in any other location.



1 Q. Then, can we then look at
2 surrounding lands and you have talked, you have already
3 got into this. Can we agree that farming is a source
4 of food for birds?

5 A. Sometimes.

6 Q. For example, we have all seen when
7 we drive along the highway a tractor is moving along
8 ploughing a field and there are a collection of birds
9 flying around the tractor?

10 A. Right. Gulls are very commonly
11 attracted to the earthworms that are turned up, exposed
12 during the ploughing operation.

13 Q. So, we can agree then that even
14 without the landfill we have fields in this area which
15 will attract birds?

16 A. Intermittently they will attract
17 birds.

18 Q. For that reason, I think that we
19 find pages 7 and 8 in this guideline which is at Tab 6
20 of Mr. McDonald's witness statement. Perhaps you could
21 go with me to those pages. Do you have them?

22 A. Page 7 and 8 of which part, the
23 main body of the report?

24 Q. It is 15.00, compliance with
25 standard agricultural lease clauses, do you see that?



1 A. Yes, I have that.

2 Q. Here we have, if you like, a
3 series of standards applicable to a situation where an
4 airport has leased some of its land for agricultural
5 purposes?

6 A. Right, under certain
7 circumstances.

8 Q. If you look at paragraph A ii
9 under the seven points you see things being dealt with
10 such as the choice of crops and paragraphs i, ii, iv
11 and v and the impact of ploughing in paragraph vi, vii
12 and in paragraph iv there is reference to fencing and
13 that kind of control?

14 A. Yes, generally.

15 Q. If you go over the page to page 8,
16 which at least in my copy is towards the front for some
17 reason. Would you read with me now, sir, paragraphs v,
18 sorry, vi and vii on that page:

19 "For those runways where the average
20 number of bird strikes over the previous
21 five years is five strikes or more a
22 year, there shall be no agricultural
23 leases for the use of land within 150
24 metres of runway centre lines or runway
25 ends."



1 Do you see that?

2 A. Yes, I see that.

3 Q. So five strikes or more a year and
4 the airport manager's instructions are no more
5 agricultural leases; right?

6 A. That is what this paragraph says,
7 yes.

8 Q. Paragraph vii:

9 "For those runways where the average
10 number of bird strikes over the previous
11 five years is less than five strikes per
12 year, any agricultural lease that covers
13 the whole or part of any area within 150
14 metres of the runway centre line or
15 runway end shall have a clause that
16 makes the lease subject to termination
17 at the end of each 12 month period."

18 Do you see that?

19 A. Yes.

20 Q. So less than five strikes a year
21 you can have a new lease for a year. In other words,
22 you can renew it every year and every year you analyze
23 how many strikes you have had that year. Fair enough?

24 A. That's what it says. I don't
25 necessary agree with the policy.



1 Q. But it is what the policy says,
2 correct?

3 A. That's what it states here, yes.

4 Q. So according to the policy, the
5 guidelines produced by Transport Canada it will be okay
6 to have a lease on lands near the end of a runway so
7 long as the number of strikes does not go to five in a
8 given year?

9 MR. ESTRIN: Sorry, have you finished
10 the question. Before the witness answers the question
11 obviously this witness can read as we all can, I am not
12 sure where the catch is. Mr. McDonald as a
13 representative of Transport Canada will be on the
14 stand tomorrow in all likelihood. If there is any
15 question of interpretation or comment on the policy, it
16 should appropriately be put the witness. As Dr.
17 Richardson says he can read it. That's what it says
18 and if that is the kind of evidence Mr. Lederer wishes,
19 that's fine, but beyond that...

20 MR. LEDERER: For the moment it is
21 exactly the kind of answer I want, Mr. Estrin, be
22 patient.

23 Q. That is what it says?

24 A. That's what it says.

25 Q. So what we could take from that



1 then can we, isn't it, that Transport Canada is
2 prepared to accept as an acceptable risk for bird
3 strikes from this one cause, this one cause, one
4 attractant, four strikes a year.

5 MR. ESTRIN: Don't answer the question.
6 Obviously that question as to whether or not or what
7 Transport Canada accepts or doesn't accept that
8 properly should be put to Mr. McDonald. If Mr.
9 McDonald was not here to answer for Transport Canada
10 and this document it would be another question, but why
11 ask it of a witness who is not here to represent and
12 interpret Transport Canada's policy.

13 MR. LEDERER: This witness is here as an
14 expert. I can put to him any document with which he is
15 familiar. I choose to put this document to this
16 witness. He said he was familiar with it. He has come
17 here and said there is a problem here, we are going to
18 have bird strikes. I want to investigate with him the
19 degree of acceptable risk. That's what my question is
20 about. It is entirely proper. Mr. Estrin may not like
21 it, or he may rather have Mr. McDonald, especially
22 since I told Mr. McDonald what I am going to ask him.
23 There is nothing wrong with this. Mr. Estrin may not
24 like it, the witness is familiar with it, it was put to
25 the witness in a question from Mr. Griffiths and the



1 witness was unable to answer any questions about it.
2 He could have said so and he didn't. This is proper.

3 MR. LANCASTER: It is proper.

4 MR. ESTRIN: Mr. Chairman, if the
5 witness feels he is qualified to answer the question.

6 THE WITNESS: I can make some comment on
7 it, I don't know what was in Transport Canada's
8 thinking in laying out that particular cut off point.
9 But, one part of your question you said that does this
10 not imply that Transport Canada thinks that it is
11 satisfactory to have a particular cause for collisions
12 provided you don't have more than four, five cut-off.
13 I think that is, there is an unwarranted jump in there.
14 The agricultural practice that is being regulated by
15 this particular clause is not at all necessarily cause
16 for all three, four, five, six, seven, whatever the
17 number of strikes is at that runway.

18 Elsewhere in this document it does point
19 out that landfill sites are in a totally different
20 category from this.

21 MR. LEDERER: Q. You can have five
22 strikes from all causes and the lease can continue. Do
23 you agree with me that that is what it says, based on
24 just what you have said?

25 A. That's what it apparently says.



1 Q. So from all causes then it appears
2 that Transport Canada, I am not saying it is
3 satisfactory, we can all agree that nothing is the only
4 thing that's completely satisfactory, but it is
5 prepared to accept this as an acceptable risk and
6 continue the lease where you have five or less bird
7 strikes?

8 A. Again I think there is an
9 unwarranted jump in there. Again I don't know what
10 Transport Canada's thinking is, but I would assume that
11 they are not assuming that all five of these strikes
12 are going to be caused by the agricultural practice.

13 Q. My question is, I put it to you
14 now, doesn't suggest that. Five bird strikes in total
15 from any cause and the lease can continue. It is only
16 when you get more than six from any cause.

17 A. And a lease which may have caused
18 zero, one, two, three or five of those can continue,
19 that's what it appears to say.

20 Q. So based on your interpretation
21 then and I am prepared to accept it from these
22 questions, based on your interpretation it would appear
23 that Transport Canada will accept an acceptable level
24 of risk, not that it is satisfactory, an acceptable
25 level of risk, five strikes at an airport from any



1 cause before it stops the lease from continuing?

2 A. Well, that is what this clause
3 appears to say. There may be other things in the
4 document that have a bearing on it and I think
5 Transport Canada is the appropriate agency to deal with
6 that.

7 Q. Let's go from that clause. We
8 have some guidance for what one agency may find is
9 acceptable. Do we agree?

10 A. It is a point that bears on that
11 subject, yes.

12 MR. LANCASTER: Do you feel -- do you
13 anticipate going on for the rest of the afternoon?

14 MR. LEDERER: I think that's a fair
15 assumption, sir.

16 MR. LANCASTER: I think that will
17 probably be so, so we will take a few minutes. Do you
18 wish to have this 1978 report filed? We will mark it
19 then Exhibit H-400.

20 ---EXHIBIT NO. H-400: M.M. Dillon Report of 1978
21 by LGL Limited

22 ---Recess

23 MR. LANCASTER: Please be seated.

24 MR. LEDERER: Thank you.

25 Q. Apart from agricultural leases and
five birds and all that, would you agree with me that



1 farming practices will serve as an attractant to birds
2 and be a supplier of food, as it were of food to them
3 when certain things are going on, certain farming
4 activities are being carried out.

5 A. Certain farming activities will
6 attract birds at certain times of the year.

7 Q. Can we agree there is farming
8 carried on in and around Site D consistent with the
9 evidence here?

10 A. Right.

11 Q. So now we know there is a large
12 water body, we know that we have an airport and we know
13 that we have farming practices. So we know that
14 without a landfill we are going to have these potential
15 bird attractors present, do you agree?

16 A. We are going to have the water
17 body in the general area, but not within a few miles,
18 not within five miles, for example of the Burlington
19 Air Park. We are going to have various agricultural
20 practices that do sometimes attract birds.

21 Q. Birds do fly from this large water
22 body, that's your evidence, isn't it?

23 A. Some of the gulls will come and
24 land, yes.

25 Q. Now, so can we agree then that we



1 have those features that will bear upon the presence of
2 birds, if you are happy with that phrase, even if there
3 is no landfill present?

4 A. Yes.

5 Q. Which indicates then the degree if
6 you like, the possibility of the potential for bird
7 strikes in the absence of landfill. Do you agree?

8 A. Yes, although circumstances
9 pertain now because the Air Park is operating
10 satisfactorily.

11 Q. To the extent, I just want to
12 advert for a moment, to the extent there are gulls in
13 the area could I refer you to page 9 of your 1978
14 report which is now marked, Mr. Chairman, as
15 exhibit ...

16 MR. LANCASTER: H-400.

17 MR. LEDERER: Q. I would like to read
18 you the first full paragraph on that page. Do you have
19 that, sir?

20 A. Page 9, yes.

21 Q. "Not all gull roosts are on large
22 water bodies like Lake Ontario. Some
23 are on small lakes such as Wilcox Lake
24 and Musselman's Lake in the Toronto
25 area. The Kelso Conservation Area four



1 and a half miles northwest of the
2 proposed landfill site will probably be
3 used for roosting by some gulls that
4 would be attracted to the proposed
5 landfill."

6 Do you see that?

7 A. Yes.

8 Q. Do you accept that as being
9 relevant and accurate for today as well as for 1978?

10 A. Yes, I think so.

11 Q. Then those gulls would come from
12 the northwest and in those circumstances, as I
13 understand it, the Air Park would not intervene between
14 the landfill and the place of origin of the birds,
15 would you agree, I am sorry, the Air Park would not
16 intervene between the landfill and the place of origin?

17 A. It is not directly on that route,
18 that is correct.

19 Q. So just as you have suggested that
20 in Toronto that tends to depreciate the level of the
21 problem. Can we agree that to the extent the birds are
22 attracted from those other areas like the Kelso
23 Conservation Area, those birds would not contribute to
24 the problem to the extent they would from Lake Ontario?

25 A. I am not sure what you meant by



1 depreciate the problem.

2 Q. I mean the problem isn't going to
3 be as great because they are not going to be inherently
4 flying in the path of the airplanes?

5 A. They are not flying as close to
6 the path of the aircraft. Also of course there will be
7 far less gulls coming from such small inland water
8 bodies.

9 Q. No doubt, but to the extent they
10 contribute it would be a less important factor?

11 A. Yes.

12 Q. Now, can we just return to the
13 notion of attractors, and would you go with me now,
14 sir, to Tab 6 again in Mr. McDonald's witness statement
15 and most particularly now to Appendix G. Let me just
16 tell you that in my copy again the pages here are
17 everywhere. Basically what I would like you to do is
18 to look at G-3 and G-4. Do you have those?

19 A. G-3 and G-4, yes.

20 Q. To be absolutely clear this is a
21 list would you agree of potential attractors for birds?

22 A. Yes, that is correct. Broken down
23 by level of severity.

24 Q. Area A, are those things which,
25 area A is the area within five kilometres, is it not,



1 and area B, the area within ...

2 A. 3.2 kilometres.

3 Q. And 8 kilometres and yes yes, no
4 no refers to whether or not you would be permitted that
5 use within that distance of the airport?

6 A. Well, permitted, it is actually a
7 guideline.

8 Q. Within the guideline that would be
9 consistent with the guideline, do you agree?

10 A. That is correct.

11 Q. I am not so interested, I think
12 Mr. Estrin has been quick to point out that we can read
13 the yes yes and no no. I am just interested that this
14 is a list of attractors. The first thing we could do
15 perhaps is take Exhibit -- the exhibit behind, 274, I
16 am going to just show you Exhibit M-102 and point out
17 to you that there is a small plot of land that is shown
18 in the southeast corner of the site. Do you see that?

19 A. I see some demarcated area, yes.

20 Q. In the course of this hearing that
21 has been identified as a nursery. Were you aware there
22 was a nursery there?

23 A. No, I haven't looked at such
24 questions.

25 Q. You will see that if you look at



1 land use and you look at these attractors you will see
2 that a nursery is one of the attractors, the first
3 attractor that is listed?

4 A. Well, it is on that list. It is
5 one of the ones that is allowed.

6 Q. No question. I am not arguing
7 that with you. I agree it is allowed. Will you agree,
8 however, that it is an attractor of birds?

9 A. It might be an attractor. Birds
10 would occupy that habitat as they do almost any other
11 habitat, but as the guideline indicates, it is not
12 considered to be a problem habitat in the sense of many
13 others on the list.

14 Q. In the absence of the landfill it
15 may yet attract some birds to this area?

16 A. Some birds occur in almost any
17 habitat.

18 Q. If we go further down this list,
19 I believe there is evidence that there is either or
20 both of stock farming and dairy farming in this area.
21 We will have to check the record for that. Are you
22 aware of that in this area?

23 A. Again I have not looked at these
24 matters at all.

25 Q. Assuming for the moment that they



1 and area B, the area within ...

2 A. 3.2 kilometres.

3 Q. And 8 kilometres and yes yes, no
4 no refers to whether or not you would be permitted that
5 use within that distance of the airport?

6 A. Well, permitted, it is actually a
7 guideline.

8 Q. Within the guideline that would be
9 consistent with the guideline, do you agree?

10 A. That is correct.

11 Q. I am not so interested, I think
12 Mr. Estrin has been quick to point out that we can read
13 the yes yes and no no. I am just interested that this
14 is a list of attractors. The first thing we could do
15 perhaps is take Exhibit -- the exhibit behind, 274, I
16 am going to just show you Exhibit M-102 and point out
17 to you that there is a small plot of land that is shown
18 in the southeast corner of the site. Do you see that?

19 A. I see some demarcated area, yes.

20 Q. In the course of this hearing that
21 has been identified as a nursery. Were you aware there
22 was a nursery there?

23 A. No, I haven't looked at such
24 questions.

25 Q. You will see that if you look at



1 land use and you look at these attractors you will see
2 that a nursery is one of the attractors, the first
3 attractor that is listed?

4 A. Well, it is on that list. It is
5 one of the ones that is allowed.

6 Q. No question. I am not arguing
7 that with you. I agree it is allowed. Will you agree,
8 however, that it is an attractor of birds?

9 A. It might be an attractor. Birds
10 would occupy that habitat as they do almost any other
11 habitat, but as the guideline indicates, it is not
12 considered to be a problem habitat in the sense of many
13 others on the list.

14 Q. In the absence of the landfill it
15 may yet attract some birds to this area?

16 A. Some birds occur in almost any
17 habitat.

18 Q. If we go further down this list,
19 I believe there is evidence that there is either or
20 both of stock farming and dairy farming in this area.
21 We will have to check the record for that. Are you
22 aware of that in this area?

23 A. Again I have not looked at these
24 matters at all.

25 Q. Assuming for the moment that they



1 are here, would you agree with me there is again
2 another, however small a contributor, another attractor
3 of birds in this area?

4 A. As I have said almost every
5 habitat will have some birds in it and it is not listed
6 in this list in the same fashion as some of the others
7 like landfills.

8 Q. Looking at this, going down now to
9 recreational uses, there has been some evidence here
10 and I don't know if you are aware of this, but there is
11 a plot of land, I believe I am pointing to the right
12 property, it is to the southeast of the site and it has
13 been identified I believe as a riding academy. Are you
14 aware of whether or not that is a riding academy?

15 A. No, I have no information about
16 that.

17 Q. Assuming again that the evidence
18 is consistent with that and then if it isn't your
19 answer will have no meaning for this Board. You will
20 see that riding academies are an attractor of birds on
21 this list?

22 A. They are listed on the list, yes.

23 Q. You will see as well such things
24 as parks and golf courses?

25 A. Yes, I see them on the list again



1 in a lower risk category.

2 Q. Absolutely. Will you agree with
3 me, however, that in proximity to communities such as
4 Milton and Burlington and Oakville, you are likely to
5 find such uses as golf courses and parks?

6 A. I am sure they are there, yes.

7 Q. Campgrounds?

8 A. I don't know that.

9 Q. They too would be attractors for
10 birds?

11 A. Birds would occur in all habitats,
12 yes.

13 Q. Then if you go over to page G-4
14 and look at the commercial uses, parking lots,
15 theatres, warehouses and service stations, all of those
16 things would associate with a community such as
17 Burlington as well, is that correct?

18 A. In general, yes.

19 Q. Do you expect to find those in
20 this area as well?

21 A. Many of those things are not
22 things I would expect to find in an area specifically
23 like this that is rural, but in Milton I might.

24 Q. My point, I suppose this is
25 obvious, the fact of the matter is that in the absence



1 of landfill, there are still a large number of land
2 uses in this area, farming primarily, which are
3 associated with attractiveness to birds. Do you agree?

4 A. I agree that birds occur in almost
5 every habitat. Most of the ones that you have listed
6 are not habitats that have a strong degree of
7 attraction to most kinds of birds.

8 Q. Will you agree with me therefore
9 that what these things all indicate in lesser degrees,
10 as you suggested, is that in the absence of landfill,
11 there are land uses here that will attract birds and
12 cause potential for collisions between birds and
13 aircraft?

14 A. I have already agreed that there
15 are birds in that area now and birds are a potential
16 hazard at any airport. You have stated that many of
17 these activities are in the area, I have no evidence
18 against that.

19 Q. When we come to assess your
20 unlikely scenario of a serious collision with the
21 landfill present, we are going to have to take into
22 account that that possibility is already and will
23 remain present as a result of these other uses.

24 A. Some of these other uses will
25 occur around every airport and around every location



1 that you might pick. They are not all unique things.
2 You have not, in going through this list, pointed out
3 that there are only a very small number of these that
4 are in a high hazard category and a landfill site is
5 one of those.

6 Also, there is another document on land
7 use practices that we have already been referring to
8 earlier today from Transport Canada that lists
9 extremely hazardous land use practices and various
10 other lesser categories. As we discussed earlier there
11 were only two land uses that are listed under extremely
12 hazardous land use categories and those are landfills
13 and coastal fish processing plants.

14 Q. Farming is not found anywhere on
15 this list in particular, is it?

16 A. I don't know.

17 Q. Have a look at it.

18 A. There are some kinds of farming
19 certainly that are listed.

20 Q. Farming which involves the notion
21 of ploughing and growing grain, that kind of farming,
22 that is not found on this list here, is it?

23 A. I would have to look through the
24 list.

25 Q. Look through it then.



1 A. There are several kinds of
2 farming.

3 Q. Let me make a point of this. Tree
4 farming, dairy farming and sod farming. Do you see
5 those?

6 A. I see those and of course some of
7 those do involve ploughing.

8 Q. The kind of grain farming, we have
9 had discussions here, there is various kinds of grain
10 grown. That is not it here. Do we agree it is not on
11 this list?

12 A. Not exclusively listing. Of
13 course grain is grown as part of some of those
14 activities.

15 Q. If we go to page 7 of this
16 document, however, we find specific treatment for
17 specific kinds of agriculture, don't we?

18 A. The page that says "Compliance
19 with standard agricultural lease clauses."?

20 Q. Yes. This kind of agriculture
21 is dealt with there, for example, looking at No. 5 in
22 particular, you are not allowed to:

23 "Any land that is beyond the bird
24 control area and within the airport
25 boundary shall not be used for the



1 growing of oats, corn or sunflowers."

2 Do you see that?

3 A. I see that clause.

4 Q. Up to No. 3:

5 "For all land that is beyond 150 metres
6 of any runway centre line or runway end
7 but within the bird control area the
8 only type of agricultural activity
9 allowed is the growing of grass, hay,
10 clover and alfalfa."

11 Do you see that?

12 A. It's there.

13 Q. Would you agree with me that
14 farming of that type is sufficiently high risk that it
15 requires this rather specific treatment?

16 A. For areas very close to the Air
17 Park, it is listed on this list.

18 Q. So would you agree with me then
19 that farming is depicted in that list of a particular
20 type and you will find the record shows reasonably
21 consistent with what is said to be carried on here, is
22 a high risk kind of use?

23 A. No, I am not prepared to say.

24 Q. You are not prepared to say that
25 grain farming is a high risk kind of use?



1 A. It depends on your definition of
2 high in relation to what and so on.

3 Q. Let us say you plough the field.
4 Would you agree you turn over the soil, insects and
5 worms appear that will supply a source of food. Do you
6 agree?

7 A. In many circumstances, yes.

8 Q. You plant the seeds and the seeds
9 are on the ground and some of it is on the surface and
10 doesn't get properly buried. That is a source of food
11 too, right?

12 A. It can be.

13 Q. The plant begins to grow and corn
14 begins to grow and birds would be interested in that
15 too, wouldn't they?

16 A. Some birds are.

17 Q. That's why in fact you used to
18 have scarecrows and in fact some farms have the kind of
19 cannons and noisemakers Mr. Estrin was referring to?

20 A. Those are normally fruit farms not
21 grain farms.

22 Q. That's different farming. You
23 agree with me that kind of farming provides a risk of
24 birds being attracted to the area which is a relatively
25 high risk consistent over a fairly lengthy period of



1 time?

2 A. I agree that birds are attracted
3 to those habitats as they are to many others. I am not
4 prepared to make a blanket agreement that that is a
5 high risk in comparison with some others.

6 Q. Are you prepared to agree with me
7 it is a risk that occurs in this area in the absence of
8 a landfill it would attract birds for the reasons I
9 have reviewed with you?

10 A. Sometimes birds will be there for
11 those reasons. They are already there for those
12 reasons.

13 Q. And again when we come to assess
14 your unlikely scenario of the serious collision with a
15 landfill in place, we are going to have to consider the
16 fact that this kind of farming is going on in this area
17 already, aren't we?

18 A. I am not sure that that needs to
19 be considered exclusively, given the fact that the Air
20 Park is there and has been there for quite a number of
21 years, and has apparently been operating without
22 significant bird hazard to aircraft problems. All the
23 things you are talking about are things that are not
24 going to change as a result of any action that occurs
25 as a result of this process.



1 Q. You have also agreed that even
2 with the landfill it is going to be unlikely that we
3 have a serious accident, haven't you?

4 A. Unlikely but considerably
5 increased probability.

6 Q. And looking at that we will have
7 to consider again, we will have to consider again the
8 fact that there is a certain degree of risk already
9 present, won't we, as presented by this kind of
10 farming, for example?

11 A. I am not sure that you do need --
12 I don't know that the range of considerations that this
13 process takes into account, but the fact is that the
14 kinds of activities that you are talking about are by
15 no means unique to any one site.

16 Q. I never said they were. This is
17 the site we are analyzing, isn't it, sir?

18 A. It would seem that your
19 deliberations would concern mainly activities that
20 would differ from one place to another. As I think it
21 is obvious that we are getting well beyond the area in
22 which I am an expert.

23 Q. You have already said, haven't
24 you, that collisions have occurred at this airport?

25 A. I have been informed by the



1 airport operator of two.

2 Q. You have said that any collision
3 randomly may turn out to be a serious one?

4 A. That is true.

5 Q. So, we already then have the
6 potential for a serious collision, don't we, even now?

7 A. At this airport as well as
8 virtually any other.

9 Q. We will have to consider that fact
10 and the degree of attractiveness is already there,
11 aren't we?

12 A. It is not entirely clear that that
13 is logical to me.

14 Q. Sir, will you agree with me that
15 quite apart from food, roosting places, that there are
16 also established migration patterns which birds have?

17 A. Yes.

18 Q. When a plane flies through those
19 migration patterns it can be a serious collision,
20 correct?

21 A. Yes.

22 Q. So will you agree with me then
23 that you can have a collision with a bird pretty much
24 anywhere, would you agree?

25 A. Well, anywhere over land or near



1 land, as long as the aircraft is below a certain
2 altitude that is consistent with where birds fly.

3 Q. Given that you have said randomly
4 that could be serious. Any of those collisions could
5 be serious?

6 A. In general, yes.

7 Q. So no matter what we do, short of
8 putting all aircraft on the ground and leaving them
9 there, we are going to have this problem at some level.
10 Agree?

11 A. There is always going to be some
12 level of risk, and of course what we are trying to do
13 is reduce that risk to the minimum possible.

14 Q. But you do agree there will always
15 be some degree of risk?

16 A. As far as I know from current
17 thinking about technology, yes.

18 Q. I guess one of the issues for this
19 Board to consider is whether or not the degree of risk
20 posed by this landfill taking into account all the
21 other considerations they must look at, which you
22 haven't, one of the questions they will have to ask is
23 whether the risk here is acceptable?

24 A. I expect they will take that into
25 account, yes.



1 Q. One of the things they will look
2 at presumably is whether or not there is any potential
3 and the degree of potential for that risk here or
4 anywhere without the landfill, right?

5 A. Yes, nobody is denying that there
6 is some risk anywhere. What we are concerned about is
7 the degree of increasing risk.

8 Q. Sir, can we agree that this
9 potential exists virtually every time an aircraft takes
10 off?

11 A. There is some varying, highly
12 varying, degree of probability of a strike during any
13 take-off and landing.

14 Q. Can we agree that most flights
15 pass over water, over farms, over amusement parks, over
16 some of these land uses that will attract birds?

17 A. That is true, and as I just
18 intimated, the risk is highly variable depending on
19 what particular kind of activity they are passing over.

20 Q. You would agree with me that
21 since, and I am not in the least bit trying to be funny
22 But since the Wright Brothers in about 1912, there have
23 been literally millions of airplane flights?

24 A. There have been millions of
25 airplane flights, yes.



1 land, as long as the aircraft is below a certain
2 altitude that is consistent with where birds fly.

3 Q. Given that you have said randomly
4 that could be serious. Any of those collisions could
5 be serious?

6 A. In general, yes.

7 Q. So no matter what we do, short of
8 putting all aircraft on the ground and leaving them
9 there, we are going to have this problem at some level.
10 Agree?

11 A. There is always going to be some
12 level of risk, and of course what we are trying to do
13 is reduce that risk to the minimum possible.

14 Q. But you do agree there will always
15 be some degree of risk?

16 A. As far as I know from current
17 thinking about technology, yes.

18 Q. I guess one of the issues for this
19 Board to consider is whether or not the degree of risk
20 posed by this landfill taking into account all the
21 other considerations they must look at, which you
22 haven't, one of the questions they will have to ask is
23 whether the risk here is acceptable?

24 A. I expect they will take that into
25 account, yes.



1 Q. One of the things they will look
2 at presumably is whether or not there is any potential
3 and the degree of potential for that risk here or
4 anywhere without the landfill, right?

5 A. Yes, nobody is denying that there
6 is some risk anywhere. What we are concerned about is
7 the degree of increasing risk.

8 Q. Sir, can we agree that this
9 potential exists virtually every time an aircraft takes
10 off?

11 A. There is some varying, highly
12 varying, degree of probability of a strike during any
13 take-off and landing.

14 Q. Can we agree that most flights
15 pass over water, over farms, over amusement parks, over
16 some of these land uses that will attract birds?

17 A. That is true, and as I just
18 intimated, the risk is highly variable depending on
19 what particular kind of activity they are passing over.

20 Q. You would agree with me that
21 since, and I am not in the least bit trying to be funny
22 But since the Wright Brothers in about 1912, there have
23 been literally millions of airplane flights?

24 A. There have been millions of
25 airplane flights, yes.



1 Q. What I would like you to do now,
2 sir, is turn to the tab in your witness statement to
3 which Mr. Estrin did not refer you, and this is Tab 3.

4 A. In my witness statement?

5 Q. Yes.

6 A. Right.

7 Q. This is a paper entitled
8 "Accidents and Serious Incidents to Civil Aircraft due
9 to Bird Strikes". Do you see that?

10 A. Yes.

11 Q. By Mr. John Thorpe?

12 A. Yes.

13 Q. What you have is the first page
14 and a list of serious incidents. I just observed,
15 first of all, that these incidents are from virtually
16 all over the world, Derby Australia, Italy, Corsica,
17 Greece, Melbourne, Paris, Uganda. Do you see that?

18 A. I haven't followed through all
19 those points, but it is meant to be a worldwide
20 compilation of all the serious incidents he was aware
21 of within limits in terms of years and so on.

22 Q. Let me just read you the
23 introductory paragraph, perhaps you could read along
24 with me here:

25 "The paper contains detailed histories



1 of accidents and serious incidents e.g.,
2 double engine ingestion, holed air
3 frame, for the years 1981 to 1983. An
4 attachment contains the summary of all
5 fatal accidents due to bird strikes
6 between 1912 and 1980."

7 Do you see that?

8 A. That is correct, all civil fatal
9 accidents to civil.

10 Q. Would you agree with me that there
11 is some attempt here then to be comprehensive?

12 A. In terms of fatal accidents, yes.

13 Q. Absolutely. Which we can agree is
14 a kind of serious accident?

15 A. One of the kinds of serious
16 accidents.

17 Q. Can we then look at page, the
18 paragraph under the title "Introduction", do you see
19 that?

20 A. Yes.

21 Q. "Surprisingly the first fatal
22 accident caused by a bird strike was
23 when a Wright Flyer crashed after
24 striking gulls in 1912. Since then
25 there are known to have been 18 fatal



1 accidents to civil registered aircraft
2 and at least 34 aircraft destroyed. It
3 is likely that there are more as
4 information is only accurate for about
5 the last 20 years. Of these fatal
6 accidents, 5 involved public transport
7 airport and 13 involved general aviation
8 aircraft.

9 The number of fatal accidents to
10 transport-sized aircraft is thus quite
11 modest and there have been no fatal
12 accidents involving jet airliners."

13 Do you see that?

14 A. I see that.

15 Q. Do you agree with me, sir, that
16 stacked up against the millions of civil flights that
17 have taken place since 1912, these are pretty small
18 numbers. 18 accidents causing fatalities and 34
19 aircraft destroyed?

20 A. That is a small ratio.

21 Q. It is also fair to say, isn't it,
22 that there is no effort in this to associate any of
23 these accidents with the proximity to landfill, is
24 there?

25 A. That was not the purpose of this



1 compilation, no.

2 Q. Some of them and some of them may
3 not, can we agree?

4 A. Some of the incidents listed in
5 this paper, right, indeed, will not deal directly with
6 landfills.

7 Q. Just to be fair to you, I will
8 read the remainder of that paragraph:

9 "The increased awareness of the problem,
10 implementation of proper measures at a
11 growing number of airports around the
12 world, and tougher airworthiness
13 criteria for aircraft and engines may
14 account for this. However, there have
15 been some very near misses in recent
16 years such as the Kennedy Airport DC-10
17 and the Belgian Boeing 737 write-offs
18 when the occupants escaped from the
19 burning aircraft. There have also been
20 many cases of multiple engine damage,
21 fortunately with just sufficient power
22 to return or runway length in which to
23 stop."

24 Do you see that?

25 A. Yes.



1 Q. Again you can't associate these
2 with landfill or not?

3 A. Some of them are, but not all of
4 them.

5 Q. Which ones?

6 A. You mean of these two specific
7 ones that he lists, Kennedy DC-10, there are a number
8 of landfill sites right around Kennedy Airport that
9 attract gulls in that area and are very much a concern.
10 The Belgian incident, as I recall, was not involving
11 gulls.

12 Q. You can't be certain if the one
13 involved a landfill, Kennedy Airport is also quite near
14 water, isn't it?

15 A. I guess it is.

16 Q. I am not suggesting, you cannot
17 associate it with landfill and draw that conclusion,
18 you just don't know, that's fair, isn't it?

19 A. Landfills are one of the reasons
20 why there are so many gulls in the Kennedy Airport
21 area.

22 Q. Come on, Mr. Richardson. In the
23 particular case, you don't know whether that gull was
24 there as a result of a landfill or whether it happened
25 over water, or whether it happened because of some



1 other attractant, do you know, sir?

2 A. I know where it occurred, it was
3 on the runway. We do not know why those particular
4 gulls happened to be at that particular spot at that
5 particular time.

6 Q. They may have been there because
7 of the airport itself, which you have agreed may be a
8 bird attractor; isn't that possible?

9 A. That is possible.

10 Q. Thank you, sir. Now, will you
11 agree with me in assessing the degree of risk to be
12 occasioned by the site of this landfill, one of the
13 things that this Board will want to do is to look at
14 the numbers presented in this paper which show the
15 number of serious incidents that have occurred and that
16 Mr. Thorpe was able to track down from the years 1912
17 to 1980 and 1981 to 1983. You have to look at that to
18 assess the degree of risk, do you agree?

19 A. If I were the Board I would look
20 at this evidence and I would also be aware that this
21 does not include all of the serious incidents. This is
22 small civil aircraft and includes only the actual fatal
23 incidents and of course there are other cases where
24 civil aircraft, small civil aircraft have been
25 destroyed including colliding with gulls that are not



1 on this particular abbreviated compilation that deals
2 primarily with fatal accidents in the case of small
3 aircraft.

4 Q. If we took this total number of 34
5 destroyed and 18 fatalities, 52 and applied it against
6 the millions of flights that have occurred, the
7 statistical result would be that these are virtually
8 random, it would have to be in statistical terms,
9 wouldn't it?

10 A. Statistical terms would conclude
11 that the probability of a fatal collision is low. It
12 is not, however, random in the sense that the
13 probability is always the same. The probability is
14 much higher in cases where a large number of birds are
15 attracted to the vicinity of an airport than it is in
16 places where there is no such attraction of a large
17 number of birds.

18 Q. Of course. Do you agree with me,
19 I think you did, but this is something the Board will
20 want to look at in considering the degree of risk. Do
21 you agree with that?

22 A. Yes.

23 Q. Thank you. Now, sir, will you
24 agree with me that historically, airports and landfills
25 have often been located in close proximity to each



1 other?

2 A. That has been a common occurrence,
3 yes, unfortunately.

4 Q. Just by way of confirming it, Mr.
5 Estrin has referred you to your witness statement where
6 he quoted a paper of Dr. Solman's. I would like to
7 give you a copy of that paper and ask you to identify
8 it. This is a 1973 paper, "The Influence of Garbage
9 Dumps Near Airports on the Bird Hazard to Aircraft
10 Problem. "

11 A. Yes, that is correct.

12 Q. Sir, would you go with me please
13 to page 4 of the paper?

14 A. Page 4 of the paper, yes.

15 Q. I would like to read you the first
16 full paragraph, do you have that?

17 A. Right.

18 Q. "Because they are noisy at times,
19 airports are generally located away from
20 major concentrations of people, they
21 usually have good access roads.
22 Economics and human desire favour a
23 landfill site near an airport. What
24 could be simpler than to go partway
25 toward the airport and built a short



1 sideroad into a disposal site which is
2 away from where most people live and
3 where the land is not being used for
4 other purposes. That kind of thinking
5 has caused the problems I have mentioned
6 that many airports in each of the 15
7 countries where we have worked..."

8 Do you see that?

9 A. Yes.

10 Q. You agree that confirms this
11 notion that historically airports and landfills are
12 often located in proximity to each other?

13 A. Yes, I have no doubt of that.

14 Q. When we come to look at the kinds
15 of statistics to which I have referred you to and which
16 is in your witness statement, it stands to reason,
17 doesn't it that to whatever extent those landfills have
18 contributed to accidents, they are going to show up in
19 those numbers, aren't they?

20 A. In terms of fatal accidents and
21 whatever the compilation includes, yes.

22 The Board will want to consider that
23 when it comes to analyze the matter of risk here, won't
24 it, sir? They will be aware of the fact that to the
25 extent this historical phenomenon, if that is an



1 appropriate word, is correct; and that has contributed
2 whatever it is going to contribute to a serious
3 accident involving planes and birds. Do you agree?

4 A. Contribute a portion of it I think
5 it is safe to say those are major concerns.

6 Q. Disproportionate to bring us to
7 the number of 18 in millions?

8 A. 18 in a particular type of serious
9 accident, yes.

10 Q. I would also like to refer you to
11 Tab 5, this is part of the book that Mr. Blokpoel, by
12 the way do you have that book with you?

13 A. I do.

14 Q. For the moment I would like you to
15 lend me the book in a few moments, but for the moment I
16 would just like to look at page 89 which is the
17 conclusion and is the last page here. Do you have
18 that? Did you prepare this book?

19 A. The witness statement?

20 Q. Yes.

21 A. I prepared parts of it.

22 Q. Let me just indicate to you that I
23 want to make quite clear, if you just follow through
24 these pages, maybe if you could just go to the
25 beginning of Tab 5, do you have that?



1 A. Yes.

2 Q. There you have the title, the
3 cover of the book?

4 A. Yes.

5 Q. Then you have the title page,
6 "Bird Hazards to Aircraft"?

7 A. Yes.

8 Q. Then you have acknowledgements and
9 then you have page 149 and then you have page 150?

10 A. Right.

11 Q. Then you have page 89 with the
12 heading "Conclusions". Do you see that?

13 A. Why page 89 is there, I don't
14 know.

15 Q. What I want to make clear is that
16 this is not a conclusion to the whole book.

17 A. It is a conclusion to the chapter,
18 "The Bird Proofing of Aircraft."

19 Q. Can we look at that:

20 "In recent years turbine engines,
21 windshields and tail structures have
22 been developed that meet current
23 airworthiness requirements. This
24 represents a great reduction in the bird
25 strike hazard. The chance of a disaster



1 really relevant here, I might add. That is certainly
2 something that is desirable. Rather there are other
3 aspects of aircraft improvements in recent years that
4 it could be argued, go in the opposite direction.

5 Q. You are not going to suggest to me
6 that the kinds of big aircraft that you are talking
7 about, major jets, have anything to do with what is
8 being discussed here, are you?

9 A. That's what I just said. To most
10 of us it is not very relevant.

11 Q. Could you indicate to me whether
12 or not the improvements to turbine engines given that
13 you have suggested there are now some turbine engined
14 aircraft in this airport, in recent years turbine
15 engines, windshields and tail structures have been
16 developed that meet current airworthiness requirements.
17 This represents a great reduction in the bird strike
18 hazard. Do you agree with that?

19 A. We are talking here, this
20 conclusion statement refers to a wide variety of kinds
21 of engines and primarily on transport aircraft which
22 again are not really relevant to Burlington Air Park.
23 I am not qualified to say what changes may have been
24 made to the small kinds of turbine engines that are
25 used on the types of aircraft that now or might soon



1 use Burlington Air Park.

2 Q. I see, so your -- I understand now
3 what you are telling me is that this paragraph is
4 simply irrelevant to anything we are considering here
5 if the planes being discussed, turbine or otherwise,
6 won't be coming to this Air Park?

7 A. This is the generic paragraph that
8 applies to a wide variety of kinds of aircraft without
9 any specific direction towards any one kind. Many of
10 the airworthiness improvements that have been made in
11 recent years are on large aircraft that are not
12 relevant to this discussion.

13 Q. Mr. Richardson, it is really not
14 that tough and I am not being that tricky. It is very
15 simple. Let me ask you the question simply and directly
16 as I can. These improvements which Mr. Blokpoel is
17 discussing in this paragraph which you have brought
18 before this Board, do any of the aircraft which now
19 come to this airport or you think might come in the
20 future, are any of them affected by the improvements;
21 yes or no?

22 A. Yes. I think that is true, but I
23 am not a specialist in aircraft engineering and
24 airworthiness considerations, so I am not prepared to
25 discuss the details of various efforts that have been



1 made on particular types of aircraft and engines.

2 Q. I am not asking you to be specific
3 and if I did I would be getting into more trouble than
4 I have been giving you. Now, can we agree that to the
5 extent that we are now learning that there are
6 improvements that can be made to turbine engines which
7 will decrease the bird hazard, in evaluating the risk,
8 that is something that this Board will want to look at?

9 A. As I say I do not know that there
10 have been significant improvements from an
11 airworthiness viewpoint for the kind of light turbine
12 aircraft that will use the Air Park now or some such
13 things as small business jets which will have a very
14 major impact on the bird hazard to those kinds of
15 aircraft. I don't think that is a very major
16 consideration at this point.

17 Q. You have indicated it will impact
18 some of those aircraft. To that extent, however
19 limited it may be, it has the potential to increase the
20 risk, do you agree?

21 A. If there are improvements that
22 cause minor degrees of increased airworthiness then
23 that will decrease the risk slightly, but I am not
24 prepared to discuss the details of that because it is
25 not my field.



1 Q. Fair enough. You brought the
2 paragraph here and that's why I am asking the question
3 about it.

4 Now, we now have a series of things that
5 we have been through to look at in determining the risk
6 and I want to try and move to another one, still the
7 same general area. Can you agree with me and I think
8 you have said this, let me put it to you, it is your
9 opinion, as I understand it, that gulls are the group
10 of birds that most commonly are involved in collisions
11 with aircraft, do you agree?

12 A. Generally speaking over a wide
13 variety of circumstances, yes.

14 Q. Would you turn now, just to get
15 some idea of what that means to page 5 of your 1978
16 report?

17 A. Yes.

18 Q. Do you have the first, actually it
19 is the second sentence on that page I want to read to
20 you:

21 "Gulls have been reported to account for
22 about 40 per cent (Seubert, 1976) or
23 perhaps even 50 per cent (Solman, 1973)
24 of the world's reported bird aircraft
25 collisions."



1 Do you see that?

2 A. Yes.

3 Q. Do you accept these figures as
4 being relevant today?

5 A. There is some indication from
6 statistics it might be a bit lower than that, but
7 current statistics show that gulls are the single most
8 struck group in Canada.

9 Q. Those numbers of 40 to 50 per cent
10 and a bit less, we will look at those Canadian figures
11 in a few moments. Is that part of your reason for
12 concern here, there are a lot of gulls and gulls are
13 the birds which most often are in collision with planes
14 to the point that they have at times accounted for 40
15 to 50 per cent. Is that one of the reasons why you are
16 concerned about the degree of risk here?

17 A. One of the reasons why we are
18 particularly dealing with gulls. Yes.

19 Q. Sir, if the number was not 50 per
20 cent and not 40 per cent and not a little bit less, but
21 a lot less, let us say 20 per cent for argument sake,
22 would you agree that that would serve to decrease the
23 apparent risk?

24 A. Well, as I said, these numbers
25 apply to a large compilation of circumstances and the



1 20 per cent, if true, which I am not convinced of at
2 all, would apply, would not necessarily apply to a
3 particular circumstance like Burlington Air Park and
4 the landfill site adjacent to it.

5 Q. I am not asking you to apply it to
6 a particular circumstance. I am asking you and looking
7 at the problem in a generic sense. Would you agree with
8 me that the degree of risk is less if you discover that
9 not that many collisions are with gulls because the
10 danger appears to be much more broadly based. In that
11 case there would be much more birds involved since they
12 are mostly gulls here, the risk in general has become
13 decreased. Would you agree with that?

14 A. No, I think maybe just the
15 reverse. We already know there are a lot of collisions
16 with gulls and if it turns out that in fact that is a
17 smaller percentage of the total than we are thinking up
18 to now then that means there are more collisions all
19 told.

20 Q. On the contrary, sir, if you have
21 a situation where a number of gull strikes in a
22 situation where the birds are predominantly gulls is
23 less in percentage terms than you find worldwide.
24 Doesn't that suggest to you that efforts here at
25 mitigation, efforts here at gull control have been



1 takes you through to page 30, there are 41 of them and
2 I identified 10 of them as involving gulls. If you
3 want to accept that for the moment and if you want to
4 question it you can check it up overnight.

5 A. I would also want to know how many
6 involved other kinds of birds that were identified.

7 Q. Do that, but I think you will find
8 with the exception of No. 8 which is the second one on
9 the second page, No. 10, No. 13, No. 14, No. 16, No.
10 20, 21, 22, 27, 34, which is on page 30. You will have
11 to number them.

12 A. In any case, I don't have them
13 numbered.

14 Q. I think there is one other on top
15 of that, I think, maybe two. Anyway check up on that.
16 Would you agree with me, sir, can we then look at the
17 next listing which is serious airplane strikes over
18 5700 kilograms and below?

19 A. Sorry, which page is it?

20 Q. 31.

21 A. Civil airplanes.

22 Q. Now these, I just notice the
23 second last one is bats. Are bats birds?

24 A. No, they are not.

25 Q. Excluding bats then the second



1 last one there, there are two out of 13 are gulls on
2 this page?

3 A. I have also noted that two are
4 gulls, again I remind you that these sections we have
5 been dealing with that you have been going through up
6 to now are for the years 1981 to 1983. They are highly
7 restricted.

8 Q. Excuse me. I thought we agreed
9 earlier this was an attempt to be comprehensive?

10 A. The pages that you have been
11 referring to so far are an attempt to be comprehensive
12 for the years 1981 to 1983.

13 Q. We will get to 1912 or whatever it
14 is -- give me a chance. You are suddenly getting
15 anxious. Now, let us go to serious incidents to
16 helicopters on page 33. Do you see that?

17 A. Yes.

18 Q. Three of 11 I counted as being
19 gulls?

20 A. Yes, I have also marked three of
21 11 being in the years '81 to '83.

22 Q. Now, let us go to page 34 and here
23 we have 1912 to 1980?

24 A. 1912 to 1980, fatal and destroyed
25 civil aircraft over 5700 kilograms.



- 1 Q. Six of 14 on that page.
- 2 A. Six that are gulls.
- 3 Q. Do you just want to go over the
- 4 page, page 35, we agree this is still 1912 to 1980, do
- 5 we?
- 6 A. Yes.
- 7 Q. Fatal accidents to airplanes of
- 8 5700 kilograms and below and here I have got three out
- 9 of 11?
- 10 A. Three out of 11 identified as
- 11 gulls.
- 12 Q. So, a total of 24 of 91 identified
- 13 as being gulls.
- 14 A. I haven't been adding them up.
- 15 Q. I give you these numbers to check
- 16 overnight. Do you want me to give them to you again?
- 17 A. I will take your word for it, that
- 18 that is how many that are identified as gulls and some
- 19 number of the ones that are not identified are probably
- 20 gulls as well.
- 21 Q. It is a function of this business
- 22 isn't it that in every count that is taken there are a
- 23 series of birds that can't be identified?
- 24 A. Yes.
- 25 Q. There is always a class of birds



1 shown that can't be identified?

2 A. What one should always look at is
3 the percentage of the identified birds that are in the
4 group you are interested in.

5 Q. I see. In fact what you are
6 telling me is we should take out, my percentage
7 calculation of identified was 24 of 91 which is 26 per
8 cent. You are saying we should take the unidentified
9 out of the 91 and look to the percentage of gulls of
10 the identified only?

11 A. That would be a more meaningful
12 number given that some of the unidentified I presume
13 would be gulls.

14 Q. Well we will do that overnight.
15 Let's just leave that. We will come back to it
16 tomorrow.

17 In the meantime, let us move ahead to
18 Tab 4 which is the 1983 data from CATA, what is that
19 CATA?

20 A. I believe that is Canadian Air
21 Transport Association. Again this is not my -- I
22 didn't write this report.

23 Q. Sir, is this a report that you
24 would be familiar with in the normal course of
25 conducting your work?



1 A. I am familiar with some of the
2 information it contains.

3 Q. But not what that report itself?
4 I mean have you ever read this report before?

5 A. I have skimmed through this report
6 and looked closely at certain parts of it.

7 Q. As a scientist would it be your
8 normal practice to use the most up to date data?

9 A. Well, the most up to date data I
10 happen to have available to me.

11 Q. The reason I ask this is because I
12 have an actual copy of the 1984 report, but they are
13 not that different.

14 A. I have a very much marked up copy
15 of parts of the 1984 and corresponding 1984 report as
16 well and we did not use it here because it was very
17 much marked up.

18 MR. LANCASTER: This will be Exhibit
19 402.

20 ---EXHIBIT NO. H-402: 1984 CATA Report

21 MR. LEDERER: Mr. Estrin has just
22 informed me it is twenty minutes to five and I would be
23 quite happy to stop now.

24 MR. LANCASTER: We will adjourn until
25 9:30 tomorrow morning.



Nethercut & Co. Ltd.

Toronto, Ontario

17063

Richardson, cr-ex
(Lederer)

1

MR. LEDERER: Thank you very much, Mr.

2

Chairman.

3

4

5

6

---Adjournment at 4:40 p.m.

7

8

9

Certified Correct

10

11

12

P. D. McQueen

13

14

(Page No. 17100 follows)

15

16

17

18

19

20

21

22

23

24

25

