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Chair

The Honourable Peter Kent

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● (1630)

[*English*]

The Chair (Hon. Peter Kent (Thornhill, CPC)): All right, colleagues, we will resume.

As you see from the orders of the day, and pursuant to Standing Order 108(2), we will continue with our study of the defence of North America.

We have one witness with us this afternoon, Major General Fraser Holman, retired. You have his bio in front of you, I believe.

Thank you very much, General, for travelling to be with us this afternoon. I know your travel connections were tight, but we appreciate your being able to meet our schedule.

We'll have your opening remarks, please, sir.

MGen Fraser Holman (As an Individual): Thank you very much for the invitation to be here. It was a surprise to me. A week ago the clerk called and asked if I would be prepared to come to speak with you, and the topic was drones. So I assume it's because of some writing that I did about a year and a quarter ago on this topic for the Canadian International Council, of which I'm a board member of the strategic studies working group. It was in a sense to clear my own mind on what the pros and cons are of drones for Canada. I believe the link at least was drawn to your attention for that article. My thinking hasn't changed dramatically since that time, so I think I'm going to return to elements of that article.

My background in NORAD includes a stint as wing commander in Bagotville, Quebec, from 1988 to 1990, early days of CF-18 squadrons, in the plural at the time. Following that, I was a one star at the NATO air force headquarters in Heidelberg, which closed at the end of my three years as NATO was reorganizing. Then my final assignment was at NORAD headquarters in Colorado Springs from 1993 to 1996, where I ended up as the director of operations.

Following that, Jack Granatstein invited me to think about writing something, so I put together a little book called *NORAD in the New Millennium*, which was published in 2000. There was no reference to drones. I catch on that word “drone”. I have tried to use “unmanned” or “uninhabited air vehicle, UAVs”, as the terminology that best describes it to me. “Drone” has a little negative feeling in my mind. Anyhow, at that time, in the nineties, we worried a fair bit about cruise missiles as a threat. To some extent, drones are related, but in my book there was nothing on drones.

I wrote the article in August of last year, as I said, and it's fairly short, five or six pages. Another shorter article appeared in *Vanguard* magazine, which was based on that. They're both consistent.

I've never touched a drone. I'm not a practitioner. I just have thought about the characteristics of drones and their limitations. To be clear then, I don't have an insider's knowledge of this. I've read and thought about it.

A lot of other names are thrown around. If you have a copy of my speaking notes, which may well have been circulated, a number of them are there. It includes decoys, by the way. Earlier versions of things that would qualify as drones now were thought of as decoys because their purpose was obvious. It was to be a radar target that was not doing something that wasn't pertinent to an attack.

Drones can be expendable, but typically are not. The expendable variety would almost look like a cruise missile, I guess, if it's attacking. In the trade understanding of drones, the cruise missiles and ballistic missiles are specifically excluded so that, although I draw a link to them, you shouldn't take that as being the way others think of them at all. They're excluded.

● (1635)

The next points I would make have to do with the systems nature of drones. By themselves they're of virtually no value because really they're reporting back in most applications, and in order to be returned, there needs to be some control. Often the system is called UAS, uninhabited air system, or aerial system. It includes a number of things. There's a control station in which there are humans operating. Communications with them may be direct if it's a short distance away, but typically they have to be relayed somehow and that's often through satellites. There are payloads of varying natures, and the payloads themselves require a good deal of support, and sometimes control. The launch and recovery elements are critical. One of the things that have made drones more attractive and more practical in recent times, I think, has been satellite navigation. There are all of the things that are miniaturized and automated for our use. Then there has to be vehicle support in the form of fuel and consumables, and just making sure of the systems on board when it's brought back. Without those things, it's not a practical system at all.

The distance between elements of the system can be quite extended. The biggest example, I think, is that Predator drones in the Afghan theatre are sometimes, at least thought to be, controlled from Nevada, from a spot where the U.S. Air Force has long had the capacity to exercise control over UAVs. That has the effect of reducing the system's footprint in theatre. If you separate them, you can have a lighter approach in theatre. This situation is not nearly as applicable, I think, in Canadian NORAD defence, but in the Arctic it may have a value. It may be important not to have to draw a lot of capability to the site where you're trying to operate. It can be done remotely.

Communications then may be the weakest link. I think they are the most critical element. If you're going to have an effective system, it's because you have effective reliable communications with the platform in order to direct it, to control it, and to get the response back. Data is collected if it's surveillance or any kind of data reporting. These communications links are really exposed to the possibilities of jamming or deception, or even just of obstacles that interfere with line of sight causing loss of signal. Drones are from time to time lost because they have lost that control signal. Spoofing, deliberately taking control of someone's vehicle, is another distinct possibility that needs to be considered in a hostile environment.

The last point I'd make on communications is that especially when we're dealing with something like a television signal or a video signal, there really needs to be quite a lot of bandwidth available in order to deliver the signals back to the control station or the user.

Drones can be considerably automated and they can be made to be autonomous, and I'd just spend a little bit of time thinking about the difference between those two characteristics.

● (1640)

Automation really is a processing of the activities that are being undertaken, which in my mind are mostly surveillance related, but they're not always. Processing of the payload's data can be done on the vehicle, or the raw data can be sent back and it can be processed at a control station. The degree to which that's done on board or back in another station is an important feature of the system.

Autonomy applies to how much human control is in the activity of the drone. A human in the loop, to me, is a vital dimension of an armed military drone. The last point in that little series of bullets that I have is to reinforce that the military is all about the controlled application of force. That doesn't mean launching and forgetting. If we're to have armed use of drones in military contexts, in my mind it requires a human in the loop at least until the selection of the target and the decision to actually engage it.

Autonomy can be conceived in lots of ways. It really reflects the degrees of artificial intelligence. In popular writing, it can sound as if there's almost no limitation to those things. I frankly think that's a little bit futuristic yet.

The Chair: General, if I could, we usually open committee with a 10-minute presentation by the witness. We've hit that mark now. If during the next near hour of questioning you want to get to points you haven't yet addressed, that would be the opportunity to do so.

I ask your permission to proceed now to the first round of questioning.

We have seven-minute slots, beginning with Mr. Chisu.

Mr. Corneliu Chisu (Pickering—Scarborough East, CPC): Thank you very much, General, for your presentation.

When we are talking about the drones, basically the drones came out from the U.S., from the CIA. The first drone was commanded from Langley, looking in Pakistan at Tarnak farm and following Osama bin Laden in the early 2000s.

I was in Afghanistan in 2007. I understand that drones became quite an important part of the military.

We Canadians have had a UAV but it was from the Danes. You needed to launch a probe before launching the real drone. We didn't have the latest technology in drones. We used them only for surveillance to know what was going on in the night when the Taliban were coming out and doing some activities that were not very friendly for us.

In the meantime on the Kandahar base, the U.S. already had the Predators. I have had five kinds of permits to go in different areas on the base, but the Predator base was very well protected. To my surprise, I found out that the Italians had the Predators when we didn't.

From 2007 to today, of course, the technology has improved dramatically in the way the weaponry system and the Predators were developed in an exponential way. The technology has improved substantially.

What is your vision of the future for the utilization of the drones? Have you envisaged that perhaps it will be necessary to have a unit with drones in the future in the Canadian Armed Forces?

● (1645)

MGen Fraser Holman: I would think so. I thank you for the question.

We still don't have Predators, as I'm sure you know. My vision for the Canadian use of drones is substantially focused around that surveillance role. I think they have a lot to offer. The ones that you recall didn't have much endurance or range, and the Predator is one that does have both of those things. I think achieving that kind of capacity will be quite useful.

When it comes to arming them and selecting targets at considerable distance, I'm much more skeptical that this is something that is urgent for us or important, nor do I think that we have that sort of history.

We could have had cruise missiles which, as I said, were like armed drones, for decades. We've chosen not to, or at least we haven't chosen to do so, and I find circumstances haven't changed that much, except that they're more readily available.

In Canada, speaking about continental defence, I find the needs for armed attack drones very limited. I think our problems are much more in terms of knowing what's going on and persistent surveillance. I would say that that's my vision, if that's what you ask.

Mr. Corneliu Chisu: I understand that the U.S. is using drone surveillance on homeland security on the border of Mexico. I think I heard that they are using it. Do you think there could be a role, an important role, for drones in protecting our vast coastlines? I mean only in surveillance, in communicating the information, because you can raise the air force very quickly if it is a real threat.

Do you think that a continued surveillance, mostly of the Arctic, by drones could be an advantage to the defence of North America basically and our territory especially?

● (1650)

MGen Fraser Holman: Sir, I think that the Arctic is the best fit, I would say. I think we can do surveillance from fairly high altitude and therefore cover quite a wide area. I think it's an area that has sometimes limited coverage from other sensors, from satellites, certainly from ground-based radars and sensors.

It's an area where the air traffic density is quite light and interference of other flying is therefore much restricted.

As to using UAVs along our coasts, I think that's a very ambitious undertaking. It's not a wrong one, but we have such long coastlines that dealing with them would require quite a large fleet, I believe.

I think that's my answer.

The Chair: A very brief question, please, Mr. Chisu.

Mr. Corneliu Chisu: Do you think that we have a threat in the Arctic today? What is your view?

MGen Fraser Holman: No, I don't think there's a threat, sir. I think, though, that we have a national and a moral responsibility to pay attention to what's going on up there, just to be able to satisfy ourselves that there really is no threat.

Personally, I don't think there is.

The Chair: Thank you, General.

Thank you, Mr. Chisu.

Mr. Harris, please, for seven minutes.

Mr. Jack Harris (St. John's East, NDP): Thank you, General, for coming and sharing your insight based on your experience. I noted in your paper and, of course, from your experience that you were a fighter pilot. I was quite interested in how you brought that experience to the question of the use of armed drones in aerial combat and the fact that you saw this as something—I wouldn't call it far-fetched—far into the distance, and you suggested that it doesn't seem terribly realistic in the time and distances for back and forth information, as well as what you call the creativity involved in aerial combat.

You also said—and I heard this echoed, by the way, in Europe in the last week—that you were concerned about international law and the fact that we don't really have any proper law that governs it, and it's a field that hasn't been properly addressed yet, as another impediment to Canada getting involved in drones. Could you elaborate on either of those points?

I share your view, by the way, that Canada should be looking elsewhere for use for drones, but could you just comment on those two things first.

MGen Fraser Holman: The unmanned combat aerial vehicle idea that culminates, really, in unmanned dogfights among drones, seems to me extraordinarily far off in the future. Providing something that is controlled from afar...and I'm glad you read those elements in my paper, sir, and I would just restate them. Dealing from afar, that is, having the pilot out of the airplane in a control station, has to be a limitation. Even momentary delays in communications and the trickiness of situation awareness lead me to think that would be a dicey sort of operation.

In terms of autonomous use, that is, vehicles operating on just their internal and artificial intelligence, I don't see that probably in my lifetime. I think it will be decades.

Mr. Jack Harris: You talked about the potential for use of a high-altitude, long-endurance vehicle for the north. I don't know how many of them are around these days. I think you talked about the Global Hawk being a system costing $1 billion. It's been suggested, to me at least.... I know Dassault has a medium-altitude one, which they say is more appropriate to the Arctic in terms of visibility, the high winds up high, and all of that.

Are you current with these aspects of the technology? How do we acquire one of these systems? Do we have a Canadian system? Do we buy them off the shelf? How would you see that being a practical solution for Canada?

● (1655)

MGen Fraser Holman: I would anticipate we would buy off the shelf from a foreign provider, and that's largely the U.S. In more modest ways even Israel has capacities on this that they could share. I don't think we would be excluded from something like the Global Hawk if we wanted to do that seriously; that is, I think we could be trusted with that technology, and it could be sold to us.

As to the difference between the jet Global Hawk at quite high altitude, 50,000 feet and more, and the Predator, which is a propellor-driven vehicle and more like 25,000 feet probably, there are differences in what resolution the sensors will have and what field of vision, what sort of coverage, can be offered.

My view would be to favour the higher altitude and the longer endurance, despite high-altitude winds—I believe that kind of weather can be addressed—and despite the intervening clouds. Essentially, if clouds are a problem, they're a problem below 25,000 feet as well, so I don't see that argument excluding the high-altitude one. The cost may. I think they're much more costly, and to my understanding there's a bigger support package required for the Global Hawk, for the high-altitude jet.

Mr. Jack Harris: Canada, of course, has considered the system dealing with the Americans, the joint unmanned surveillance target, the so-called JUSTAS procurement. It seemed to be on hold for a long time.

What can you tell us about that?

MGen Fraser Holman: I'm sorry, I'm no longer in the know on things like that, so I'm afraid I just don't have any up-to-date information on it.

Mr. Jack Harris: Let's go back to the use of drones in the Arctic. If you're looking at surveillance, would you get real-time information from a surveillance program through a drone, or would you have recorded information that you download every six hours, or eight hours, or every time it comes back overhead? What's the system?

Would you be dealing with real time, or would you be dealing with recorded information that you then download?

MGen Fraser Holman: I think the attraction is that it is real time. It can be relayed to control stations directly or indirectly but in real time. It's not like a satellite that needs to circle and come back and be recorded in the short term.

To my mind, that is an attraction. If you're worried about real time, you can do it.

The Chair: That's the end of the time.

Mr. Norlock, go ahead, please, for seven minutes.

Mr. Rick Norlock (Northumberland—Quinte West, CPC): Thank you very much, Mr. Chair, and through you to the witness, thank you for attending today.

I'm very interested in your comments with regard to high altitude or medium altitude as it pertains to surveillance. It could be in the north or it could even be along our coastlines. What advantage does UAV have over satellite surveillance? Satellite surveillance does the same thing. It doesn't have a human operator. It's operating from a distance, and we are advised that you can almost read a licence plate from a satellite. Have you thought about a comparison between the two vis-à-vis surveillance?

MGen Fraser Holman: Indeed, I have. Satellites that stare at the space have to go around the same geostationary orbit in order to hold a point of view. That means they're at 23,000 miles. I don't believe they're reading licence plates from that distance. Typically, there is weather between them, so they're not used for optical sensors.

Other satellite orbits are closer and can get the kind of resolution you've described, but they don't stay in one place. They're always transiting whatever the targeted space might be. There are polar orbits, which are very attractive. They zip over the two poles in a 90-minute timeframe. But at an altitude, say, of 100 or 150 miles, their field of view is necessarily quite narrow. So it takes a constellation of these to have any measure of regular coverage.

Those are limitations that particularly feature in our Arctic. Those geostationary platforms just don't even see the poles because of the angle of look to the poles of the globe. The polar orbits up in high latitudes involve necessarily quite quick passes with fairly narrow coverage. Those limitations are overcome, to my mind, by UAVs that can loiter in the air mass and do an orbit, but they're really not leaving the space. They're not going to the South Pole.

● (1700)

Mr. Rick Norlock: I noticed you mentioned in your previous testimony that you felt that unmanned fighters or UA.... They're not really UAVs. Being in the Trenton area, I've been speaking to pilots as well as to manufacturers. For the next generation—probably not the aircraft we're going to purchase now, but after you and I are no longer here, so probably in 20 to 25 years—they don't think people will be in planes anymore. When we talk about UAVs in the battlefield, we know that, number one, in modern society we have an aversion to bringing back people who are no longer with us. In other words there is the cost of just human resources. For the purposes of surveillance and even for the purposes of battle, UAVs give you a couple of advantages. One, you don't see the deceased members of the armed forces coming back, and two, as far as wounded personnel go, in this day and age it's costing in the millions of dollars. When you look at the human cost, the emotional cost, and the actual cost, it makes more sense to use drones in those areas where you're likely to have casualties. Would you agree that's a significant consideration that governments make when it comes to utilizing unmanned vehicles versus manned vehicles?

MGen Fraser Holman: I do think one of the attractions of UAVs is not exposing people to the same degree of hazard. I wouldn't say it's a hazard-free environment. If the system is actually based in theatre, then.... I think you were describing a very well protected part of Kandahar airfield, which was where those drones were based.

I want to also note that mental problems can be caused by two operators, even very far out of theatre, because they're watching what happens, and they know they're the ones who have caused whatever, where they've attacked. If there are humans involved, it can be very troublesome.

You don't have to write a letter to the next of kin when one of these is shot down. That is a significant advantage.

I'm not convinced that's our problem in NORAD. That's really a deployed sort of problem, I believe, but if we're focusing on NORAD, I'd treat that a little less strongly.

● (1705)

Mr. Rick Norlock: We've heard from one of the previous witnesses or previous conversations we've had that you don't necessarily defend North America from the soil in North America. Sometimes you have to go somewhere else to defend, I always say, from the bad guys getting over here. We'll just leave that for now.

I do notice that—

The Chair: You have 30 seconds, Mr. Norlock.

Mr. Rick Norlock: I can tell you from personal knowledge that there is not only a military but a commercial usage for UAVs when it comes to moving people around. I know of an inventor who's just had $400 million invested in his company to move people around cities in UAVs. Of course, he's very worried about, I think you mentioned, some of the international law and national law. Could you elaborate on international law and national law when it comes to unmanned vehicles?

The Chair: Speak very briefly, please.

MGen Fraser Holman: The international law, I think, is that we try to use by analog what we've always understood about law of armed conflict with people directly in control of the weapons. In domestic space there are interesting challenges in trying to de-conflict users of the airspace. In my paper I tried to talk a bit about that. In Canada, Transport Canada issues what they call special flight operations certificates for specific flights or specific flight regimes. Those flights have to be programmed. They have to be described. In separating flight, when there are pilots aboard, it's all see and be seen, or we have air traffic controllers who ensure that we don't get too close to one another and that there is no conflict.

Among the UAV crowd, that air traffic control could apply. But if it's uncontrolled airspace, and a lot of Canada is uncontrolled, there really isn't a good way of managing that. So we just carve off regimes of airspace and say, "You can go and fly in that place and no one else can."

The Chair: Thank you, General.

Mr. McKay, you have seven minutes, please.

Hon. John McKay (Scarborough—Guildwood, Lib.): Thank you, sir, for your testimony.

When General Bouchard was here, I think maybe more than a year ago, he described a rather elaborate protocol for bombing runs, from identification of target right through to the dropping of the bomb. I was thinking about that as far as a UAV is concerned. What would be, if any, the substantive difference between protocols for bombing runs by a drone and a piloted airplane?

MGen Fraser Holman: I think in approving the target and figuring out what.... I'm not sure if that's the protocol you're talking about, which verifies that what you're aiming at really is a legitimate target.

Hon. John McKay: Well, presumably the front end of the target can be pretty similar. You know what you want to hit, how far you have to fly, how much gas you have to have, and all that sort of stuff.

MGen Fraser Holman: If you're just going to do one run on a predetermined target, I don't think there is any difference. If you're trying to establish a pattern of activity in a particular timeframe when a particular body of people is in the open or something, then the surveillance or the loitering and waiting for that opening to happen, I think, is more easily handled on UAVs. It's not impossible, but they're all endurance limited and that depends on fuel and things like that. Typically manned aircraft don't have as much endurance, I think, and would need to be refuelled. They do come to a human endurance limit.

Hon. John McKay: It's interesting when applied to the Libyan conflict where the launch point of the airplanes was quite close relatively speaking, just on the other side of the Mediterranean, to bombing runs to Libya where there was going to be no ground resistance to the bombing run. Given that an F/A-18 flies at $22,000 an hour, it seems to me a very attractive alternative to certain kinds of limited missions.

Is that a fair observation?

● (1710)

MGen Fraser Holman: I think it's a fair observation. I regret that I don't have a figure to compare the F/A-18 hourly costs to say a Predator, that might be the alternative. We think they run more cheaply. There's less complexity. There is no human aboard to sustain. I'm not sure whether that translates into cheaper flights yet or cheaper time loitering.

Hon. John McKay: That's interesting because I would have....

Certainly the vehicle itself is a heck of a lot cheaper than an F/A-18, or F-35, or whatever the heck we're going to buy. Where would you run up your costs other than the radar and the communications infrastructure, which presumably would be very similar to the radar and communications structure of an airplane?

MGen Fraser Holman: You're probably spot on, I just don't know.

The Predator is a lot cheaper in my expectation than an F/A-18 and that ought to limit some of the cost, but if you're going for a longer loiter then you are going through more of the consumables than you might do.

If it's a single run, if it's the defined target that you described with no particular defences or complexity, then it's probably a cheaper solution.

Hon. John McKay: We're always into cheap and cheerful.

If you extrapolate that over to the Middle East conflict and what's going on right now, why wouldn't the Americans in particular be using drones to participate in that conflict? They do have the capacity.

MGen Fraser Holman: I don't think I can comment usefully on that. I don't know. They have cruise missiles that they often use, Harpoons particularly and Tomahawks, which achieve a similar effect.

Hon. John McKay: That's a different sort of concept though.

MGen Fraser Holman: They do seem to use those, but I don't have the inside view of what the patterns of usage really are. I see them launching smart bombs, or at least I see pictures that portray that. That's probably adequate. Where there is little risk to the carrier platform, then the drone may not be quite as attractive. There aren't enough of them yet.

Hon. John McKay: My final question is about the Arctic. The Russians seem to have lots of fun these days coming up to the airspace and then backing off and we scramble and all the rest of that stuff. How would you see the deployment of drones up in our Arctic airspace? Would you have them stationed up there and then on constant monitor, or would you have them flying in and out of Trenton or wherever? Greenwood? I don't really know.

MGen Fraser Holman: My inclination if it's to serve the north is that it ought to probably be based in a central part of the north. But these would be systems studies that would be achieved. Yellowknife or Churchill or somewhere like that might look like an adequately centralized sort of spot to cover the Arctic.

The Chair: Thank you very much.

Ms. Gallant, go ahead, please.

Mrs. Cheryl Gallant (Renfrew—Nipissing—Pembroke, CPC): Thank you, Mr. Chairman, and through you, first of all, we know that a polar class cargo ship can use drones to scope the ice, but does the capability of an armed drone, be it a missile payload or a dirty bomb, to be launched from a commercial ship exist?

● (1715)

MGen Fraser Holman: You're asking whether a UAV carrying a weapon could launch from a ship. Certainly.

Mrs. Cheryl Gallant: If they were to be able to launch far enough, but close enough to shore, nap of the earth, then once it got to land, would it be detected by some type of radar?

MGen Fraser Holman: That's the problem we have with cruise missiles. I think what you're describing is more likely a cruise missile than a UAV. Off of a ship, it's hard to get some of those back on board. You might be able to launch them, but if they're reusable, they're likely to have to be rotary-wing helicopter sort of surrogates, and that is a very difficult problem. I think it's a NORAD problem.

Those bombers that do the runs along our coasts could very well be armed with air-launched cruise missiles—that was exactly the problem we worried about in the 1990s—that are very small and very difficult to detect and that fly at low altitudes.

We have very limited radar coverage around our northern warning system, so in order for us to have any confidence that we could pick them up, we had airborne radars, AWACs, airborne warning and control systems, with the down look of the radar those give, which has coverage out to larger distances. All of that applies to UAVs as well. I think that while you could launch one from a ship, if you're calling it a UAV, it's because you think you're going to get it back, and getting it back on a ship is not going to be an easy problem.

Mrs. Cheryl Gallant: No, I wasn't thinking of getting it back. What I'm thinking of is asymmetric warfare and terrorists who just plan the launch, and it wouldn't be a cruise missile per se. It would involve just using a UAV as a delivery mechanism for whatever payload they choose to use, be it a bomb or a biological type—

MGen Fraser Holman: It would be a platform.

Mrs. Cheryl Gallant: Okay. You mentioned the spoofing of UAVs being a potential problem. Is it possible to spoof a commercial airliner?

MGen Fraser Holman: With a pilot aboard, we'd like to think it's not. We'd like to think that the pilot is ultimately loyal and can understand what he's being given as instruction. I think that gives us a fair confidence that they won't be taken over.

There was an era of hijacking airplanes, and of course the 9/11 attacks were hijackings, but I don't think that's the spoofing you're talking about.

Mrs. Cheryl Gallant: No, I was thinking of another missing airliner.

UAVs are being used militarily, commercially, for civil security as was mentioned, and even by hobbyists. You said there should be or will have to be a special airspace for military and civilian. Do you foresee a problem with air traffic control insofar as individuals and commercial organizations using UAVs goes as they seem to be more commonly doing these days?

MGen Fraser Holman: I think integrating UAVS into the existing flow of air traffic is a big challenge. Air traffic control can be the mechanism, I suppose. It tends to require radio responses that a UAV can probably acquire.

Reserved airspace is the way it's handled now, but I don't think that's the solution forever. They're in small numbers and so it can be done that way. The Federal Aviation Administration in the U.S. has been given a target date of next year to come up with the procedures and process in order to integrate UAVs into regular general aviation.

I'm not given any reassurances that's really going to come to pass.

● (1720)

The Chair: That is your time.

Thanks, General.

Ms. Michaud, go ahead please.

[*Translation*]

Ms. Élaine Michaud (Portneuf—Jacques-Cartier, NDP): Thank you, Mr. Chair.

Major-General, I would first like to thank you for your presentation today.

In terms of the possibility of using armed drones, I would like to join you in saying that we must not overlook the potential psychological effects on the people operating the drones. It is rather unthinkable to say that there would be no consequences for the soldiers or to set aside the possibility that they would develop post-traumatic stress disorder or something like that. That is part of the ethical and moral dimensions that we must consider before planning such a use, which does not seem likely, necessary or desirable in Canada. Thank you for highlighting those dimensions, which we sometimes overlook, but are important.

Just now, my colleague talked about the Joint Uninhabited Surveillance and Target Acquisition System, JUSTAS, which seeks to deliver a tested and long-range unmanned aircraft to meet the mandatory capabilities of national and international operations.

How could only one type of drone meet all our needs, especially in terms of surveillance here in Canada? Is that possible or should we consider the option of having a mixed fleet?

I would like to hear what you have to say on that.

[*English*]

MGen Fraser Holman: To whether a mixed approach would be preferable in some ways, I think the answer is yes. I think there are particular tasks that the drones are better for, and there are particular tasks where the control of a pilot and the human interface is desirable. I'd be considerably supportive of that sort of approach.

Commonly it's thought that drones are good for dull, dirty, and dangerous tasks, so the long endurance, repetitive sorts of things in hazardous areas are perfect really for surveillance drones.

When it comes to applying armed weapons, I think that you're better off in the manned world, frankly, and that it's easier to assure yourself that you have the kind of control you actually want.

[*Translation*]

Ms. Élaine Michaud: Thank you.

I will ask you one last question before I share my time with my colleague Mr. Brahmi, giving him an opportunity to ask you questions as well.

You mentioned the possibility of using drones in the north for surveillance. In your view, which federal departments or agencies should be able to use them?

[*English*]

MGen Fraser Holman: I'm thinking in military terms myself, so I think this is about NORAD, so I imagined that it would be the Department of National Defence.

[*Translation*]

Mr. Tarik Brahmi (Saint-Jean, NDP): You talked about taking control or spoofing. I would rather talk about jamming because it is easier to jam than to take control.

In practice, does that mean that there are two types of situations? Let us take the case of a power that has the same technology and interference capabilities, and the case of a terrorist organization that does not have the interference capabilities; would those be two types of intervention?

[*English*]

MGen Fraser Holman: I'm not sure that I fully captured it. There are a lot of methods of managing communications so that they are reliable and cannot be intercepted, cannot be interfered with or jammed. There are frequency agile, jumping, hopping, techniques that apply really to the control of aircraft as well, but those are not foolproof.

The whole thing comes to being able to hack...the kinds of capacities we find in the Internet. I don't think airborne communications are going to be very much different from that.

The Chair: That is your time.

Thank you, General.

Mr. Williamson, you have the final five minutes.

Mr. John Williamson (New Brunswick Southwest, CPC): General, I don't have too many questions, but I'm curious to know this, as you've thought about it. What are the privacy issues in the nation if these drones are used by the military? Have you considered that at all in terms of the implication, particularly in populated areas?

● (1725)

MGen Fraser Holman: I've given it very limited consideration. I start with the belief that things that Defence does are for national security, are well intentioned, and can be well controlled, and that inadvertent breaches of personal privacy wouldn't be exploited. That's not to say they wouldn't happen.

I really don't have a refined answer for you on that.

Mr. John Williamson: I suppose, based on your answer, you would agree that some sort of control or oversight would be important to be considered by Parliament or some body.

MGen Fraser Holman: By some body, yes. Typically I take comfort that the military has a fair bit of oversight. I feel pretty proud of the way our military manages ethical challenges like that.

Mr. John Williamson: I agree.

MGen Fraser Holman: I feel more confident in them than I might in commercial operations or something.

Mr. John Williamson: That's fair enough.

Chair, I'll pass my time to Ms. Gallant.

The Chair: Ms. Gallant.

Mrs. Cheryl Gallant: Can drones be equipped with infrared sensing?

MGen Fraser Holman: Yes.

Mrs. Cheryl Gallant: To Mr. Williamson's question, if we had a drone conducting surveillance and it happened to fly over a marijuana farm, would the military be allowed to report that to the civilian authorities, or would that be a matter of privacy?

MGen Fraser Holman: My inclination would be to say that if it's something evidently criminal, which I believe you're talking about, that it would be quite reportable. The only analogy I can think of, and it doesn't fit terribly well, are infrared sensors in geostationary orbit watching for missile launches. They occasionally find forest fires and report them. To me it's a fairly likely event.

Mrs. Cheryl Gallant: I want to switch over to the joint unmanned surveillance and target acquisition system, JUSTAS. This has been in the planning stages since September of 2000. In your opinion what has caused this delay? Is the delay such that the project will no longer be viable, that it will be obsolete by the time it gets off the ground?

MGen Fraser Holman: I'm sorry I don't have any real insight or detail on that. I ought to probably, but I'd only find out through the press in any event, so I don't have an answer that's helpful on that.

Mrs. Cheryl Gallant: In your paper titled “The Future of Drones in Canada: Perspectives from a Former RCAF Fighter Pilot”, which types of drones and which uses were you referring to?

MGen Fraser Holman: I tried to describe all the possible drone applications I could see. I am skeptical of the use of armed drones of any type in Canada, particularly skeptical of armed for air combat, or air to air. I find the opportunities in surveillance to be the most attractive, and there are a lot of ranges of surveillance: weather, ice. It's not just tracking moving bad guys in their tanks. Those things are, to me, the more compelling.

I'm sorry I don't have system names to apply to those in particular. The biggest example and the most compelling case in my mind is that long endurance surveillance of the north and the high altitude system. There's only one to my knowledge. Global Hawk is the one I would mention. But in a NORAD context, that seems to be the most compelling case of the many opportunities.

Transportation might well end up being automated and put into drones. It's not quite here yet, I don't think, but it should be. I apologize for running on, Mr. Chair.

● (1730)

The Chair: Not at all. Thank you very much, General, for sharing the time with us and travelling to meet with us today to share expertise and insight.

The meeting is adjourned.