



The NStar Chronicle

The Project North Star Association of Canada

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Editor's Notes

Roger Button

Unfortunately COVID-19 and its restrictions continue to hamper the restoration of the North Star. So it's a good time to look at what has been accomplished to date by the restoration team which consists of both Museum staff and volunteers. This edition will continue the focus on the Merlin engines. As many of you know many of the volunteers are also members of our organization.

You will find photos of some of those volunteers in the technical article on engines three and four. You will also find a interview with Garry Dupont who has had a leading role in the engine shop work.

In the next edition we expect to have more articles about our members experiences in the restoration project.

In the meantime if you have any comments on this edition or suggestions for future editions please send them to me.

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Notes from the President

Chris McGuffin

I showed up for the freebie, got an education and made some friends. That was my start in aviation. In 1985 I signed up for Air Cadets for something to do. One could say my mother made me. Certainly, she encouraged. The Cadets played sports and hosted camps; for free. I had no idea about the flight scholarships and other opportunities. Certainly, I was enamored with aviation. I built model airplanes and made a wind tunnel for a science fair. That wasn't much different from my sister's engagement with visual art or my brother's fascination with insects. My real passion was fixing things, improving them or making new things. My mum probably just wanted me to get out of the basement and socialize.

Aviation was exciting but I never considered earning a living from it. I studied electrical engineering at the Royal Military College. I thought a little military service would be a precursor to advancement in the civilian tech industry. Instead of Nortel I ended up serving 28 years with the Canadian Forces. Many of my friends wore the blue uniform. I wore army green or tan depending on the season. When I flew it was usually to participate in a meeting, attend training or visit a forward operating base. Still, there can be a persistence to childhood interest.

My interest in wood and metal working matured as a hobby. I have a particularly thoughtful wife who accommodated a larger work space with every move. Nonetheless, a residential workshop can be a solitary and confined space. When I retired from military service in 2017 it was time to look for different ways to pursue my interests. It would be fun to learn from new people and with tools I didn't have access to at home. I could not imagine a better opportunity than an aircraft restoration.

My timing lined up with Project North Star, a comprehensive restoration effort: metal fabrication,

engine repair, refinishing, reupholstery, overhauling mechanical systems, woodworking and more. Some volunteers contribute decades of skill and expertise while others offer enthusiasm and commitment to learn. Everyone benefits from cross training and camaraderie. Progress is important but not more than the historical value and preservation of the artefact. Each step is supervised by our project manager, an aircraft maintenance engineer employed by the Museum.

Initially, I was assigned to reproduce and restore the wood paneling that lined the interior of our North Star. Occasionally I helped with other assignments. I watched as replacement parts were fabricated, engine #4 was reassembled and bird nests were pulled out of the tail section. In 2018 I began publishing progress and event updates on the Project Facebook and Instagram pages. Many people enjoy seeing airplanes up close. Airshows are popular for good reasons. I certainly look forward to the time I spend at the aviation museum, particularly the areas normally hidden from public view. Taking a few photos to share with our social media audience was a natural fit for me. Those updates have been few during the pandemic but they will resume imminently.

2022 is going to be a year of renewal in many ways. In January I assumed the presidency of the Association. Our previous president, Rodger Lodge, held the position for nearly 12 years. Roger has been involved with the Association for 20 years and I am thankful that he has agreed to stay on the Board of Directors. The Canada Aviation and Space Museum is actively renovating the conservation workshop. Plans for a return of volunteers to the Museum are being developed and restoration activity should resume in the months ahead. I am grateful for the encouragement of our supporters and the tenacity of our volunteers. We'll be back to the restoration effort soon.

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Our Members

This is the edited transcript of an interview with Garry Dupont by Richard Lodge.

Garry why did you join Project North Star?

I joined it when I was working full time and it was a discussion between me and my wife as I knew retirement was looming and it was what I was going to do. I had seen the article that was in the Ottawa Citizen with Robert Holmgren and Tim Timmins requesting people to attend a meeting starting the project, and my wife suggested I go to it, which I did and it gave me something to look forward to. Even when I was employed I was able to physically contribute by coming in the odd day and helping out with special projects and overhaul a few components and stuff like that.

So you worked only in the engine shop?

No. When initially I was working, I worked on various other things and only after I fully retired, I showed up and said Mike Irvin "I am here. I'll be here for four days a week". That's when he asked me to go into the engine shop because they needed help in there.

Could you have worked anywhere but you chose to work in the engine shop?

Actually, Mike chose for me. Mike was the one who said go to the engine shop.

When you started with Project North Star would you have felt that you had most experience of aviation work on engines, or could you gone anywhere on the plane?

I could have gone anywhere on the plane. Of this particular engine I had no knowledge. I had never worked on these liquid cooled engines before. I never worked on a piston engine of that size before and actually I hadn't worked on piston engines for quite a number of years because with my employment most of my airplanes were with turbines. We had some small piston engined airplanes of which I had limited experience.

So quite a bit of your work in the engine shop was a learning experience apart from learning about how the Merlin 622 was assembled, you were also learning a bit about actually working on a large piston engine aircraft?

That's correct and the systems on this particular engine were completely different from anything I had ever worked on and I came across an RCAF training manual, which somebody had donated and I took it home and read it from one end to the other over a couple of weeks. I was able to learn a considerable amount about the engine and understand

the systems and it started making sense to me, so when you start assembling and disassembling and you look at a line you know what that the line is for. You know what the electrical connections are for. You know what system they belong to so it makes that part of the process much easier.

I know from when we first started working together, you said you worked for Perimeter Airlines in Winnipeg. When you were working for Perimeter, you were working mostly on Metroliners. Correct?

Yes. We had 2 Metroliners when I was there, but we also had 4 piston operated Beechcraft Queenairs, we had 6 other Beechcraft.

When you worked at Perimeter, were you working on any part of the plane and you weren't specialising in any particular part, so moving into solely engines was really a new area of work for you?

That's correct.

When you first started working in the engine shop, who were you working with?

There was Ted Devey, John Tasseron, Michel Lacasse and two other fellows, the names escape me.

I asked a few minutes ago. If you were only interested in working on the engines. Where else would you like to work on the plane? So you worked only in the engine shop?

Anything actually, I don't do well with sheet metal work, I have done some, minor bits. I could develop those skills a bit better. Hydraulic systems; I have a fairly good interest in, landing gear, the flaps, the hydraulics and all those systems. I have learned where the pumps are and how all that works now. I have also read up little bit on the landing gear to understand it a bit better and how it works and that would be interesting.

So you could, if they had been doing the landing gear at the time you started have been quite interested in working on that side of things?

Yes.

What would you say in retrospect was the most difficult part of the work you were having to do on engines 3 and 4? Was it lack of paperwork, was it corrosion or what was it?

The most difficult part was dealing with corrosion because of the amount of corrosion in the engine and also the decision-making between my career and what I would do and what the museum wanted in restoration. The hardest learning part was learning about restoration and how to do it properly. I have

had some good mentors. and I have learned fairly well on what is required to do and what to look forward to in the future when planning the project; how to tackle it from a restoration perspective rather than a maintenance perspective.

Was Mike Irvin one of your mentors helping you to know the various procedures needed for restoration?

Yes, Mike was the main mentor. He was the one that took me under his wing and showed me the requirements and the basis of doing restoration.

When you started working there, you weren't really in charge of the engine because it was a combination of you and Ted Devey who was still working there and who had worked on engines 1 and 2. So you were working with him under Mike Irvin?

Yes. That's right.

You feel one of the most difficult parts was to make the shift from keeping an aircraft flying to restoring and conserving everything?

That's right, yes.

Having done that and got into that sort of mindset, what would you feel was the most difficult part of doing the engine, of restoring the engines that you had to be involved with, or you had to work with. Which part, I am thinking of?

The biggest part with the engines was the cleaning. Believe it or not, the engines and the old oil had been sitting there for 35 years, it was very congealed and very difficult to remove. Cleaning with solvents is not a pleasant thing to do and that was about the only method we could use was to clean and put it in the parts washer. Once you put a part in the parts washer you also had to be very careful because if it was steel, when it was removed from the part washer it would flash freeze almost immediately, so it had to be removed and treated straightaway with some sort of preserving oil to prevent the surface from oxidizing.

I very much remember John Tasseron working on the pistons and all work of getting the pistons out of the block and then John working on the cleaning the piston rings. Were you very much involved in that side of things?

Yes. Cleaning up the piston rings was a real tedious job where you could spend a whole week on one piston ring trying to free it up by scraping away the corrosion, by tapping it to free the rings. Sadly, a lot of them broke. There was nothing we could do to free them up. We tried various chemicals, soaking procedures, vibration procedures, putting them in sonic cleaners so that the vibration would free up the

dirt, but nothing seemed to work really well, except getting in there with a little scraper and trying to scrape them clean.

And when you did manage to free the parts and get them clean, you couldn't use a glass bead machine to do any cleaning because the parts were aluminum so we had to use Scotch Brite and other things to clean them?

Correct. The purpose of glass beading is to remove corrosion and not to clean. If you glass bead a surface, it changes the outer texture of it considerably. In the engine shop we had at Perimeter, the only time they used glass beading was for removing the outside surface of the engine block and then they could prepare it for painting.

Now that you have finished the main part of the work on engines 3 and 4, what are the main additional parts or work still to be done on engines 3 and 4 and maybe on engines 1 and 2?

Réj [Demers] wants to remove the engines so we will reinstall engine 4 when it is ready and then we will go back and will work on each engine successively and then work on the firewall and behind the firewall with the engine removed. At the time when we do this we will inspect the engines to see if corrosion has come back in some areas and I notice on some of the engines during Canada Day when we removed parts and cowlings to display the engine that there was corrosion showing up in certain areas where it had not been treated properly. So when we remove the engines, and Réj agrees with me, we will put them back in the engine shop and go over them thoroughly. We have also found some issues with some of the cowl parts just not being adjusted properly. So in the end, I would like to have all four engines installed on the wings properly treated so that we don't have to worry about them again and also the cowls adjusted and done properly so that at any time we can remove the cowl parts and reinstall them with ease. So that in the future, if you want to display the engine again, you could effectively remove all the cowls on all four engines with ease and then reinstall them without making any big issue of it.

Effectively you have got to remove any distortions in the cowl panels. So those are the things to be done? When you are finished working on the Merlin engines, what would you like to do? This is purely a personal thing and nothing to do with the Museum. More engines on a different plane or working on the airframe?

It really doesn't matter to me, whatever the Museum sees fit as a project, I am willing to tackle it.

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APS 42 Radar – Another Piece of the North Star Puzzle

The article below was written by our members John Makadi and Chris McGuffin. Chris and John played key roles in the acquisition of the APS 42 Radar for the North Star aircraft. In 2019 John was approached by Rejean Demers, CASM's project manager for the North Star restoration to see if he could locate the radar unit which was missing from the aircraft as explained below. John was successful and as a result in 2001 Rej asked Chris if our association could arrange for the acquisition of the unit. John and Chris coordinated its acquisition and what follows is a very fascinating story about what may be the only unit of its kind still in existence. The authors have been very modest about their contributions in dealing with a very challenging process made more difficult by the pandemic Covid-19.

The North Star was the RCAF's first strategic lift platform. It was dispatched across the country, and bridged the Atlantic and Pacific in service to Canada. In the late 1950s, the RCAF began upgrading the fleet with the addition of the APS-42 military navigation/weather radar. This radar was still sensitive equipment in 1966 when North Star 17515 was donated to the Canada Aviation and Space Museum. The radar was stripped out of the airframe along with the radios and other sensitive equipment.

Project North Star is frequently described as an effort to return 17515 to the condition she was in on her last day of service with the RCAF. The hunt was on. In 2019 Project North Star Association of Canada began searching for an APS-42 radar. Initial results were discouraging. US aviation museums with USAF aircraft had no components to offer. Further research of US military logistics documents revealed that US Department of Defense disposal instructions for APS-42 radar was to "Destroy" them due to their sensitive nature at the time.



Radar – The Unit.

We were disheartened by that discovery but certainly not defeated. Over the years, PNSAC volunteers have been resourceful about rescuing parts and assemblies. The search continued. In the spring of 2021, while continuing on-line research John stumbled across an eBay listing for an APS-42 transmitter out of Cross Timbers, Missouri (Ozarks). The seller, a military communications enthusiast, acquired the radar in a lot purchase of US Government surplus equipment. After negotiating an acceptable price for the radar, we just needed to get it to CASM.



Radar – The APS-42.

Shipping freight is usually pretty straight forward. In the summer of 2021, there were “unusual” circumstances. Transportation was a bottle neck to many industries and costs rose across the carriers. We were unable to find a freight company willing to collect the radar in the seller’s remote location. Our seller was willing to deliver to Springfield, Missouri (for a fee) but would not provide a crate. Furthermore, the freight companies that offered custom crating services were prohibitively high. Then we made contact with the “Air and Military Museum of the Ozarks” (AMMO) – a small volunteer-based museum in Springfield. The volunteers at AMMO were sympathetic to our cause and enthusiastic to help. They agreed to receive our radar from the seller,

build a custom crate and transfer it to the freight carrier. We were grateful to pay them a small honorarium which wasn’t much more than the cost of lumber for the crate. This was a wonderful example of museums cooperating across borders to preserve aviation heritage. AMMO ended up hosting the crated radar for several weeks. The hurdles of NAFTA attestations and the export of US military technology took additional bureaucratic kung-fu but the radar arrived safely in Ottawa on 10 June, 2021.



Radar – Opening the Unit.

After 17 months of social distancing, Project North Star volunteers and CASM staff gathered in the parking lot to celebrate the arrival of a missing radar. Customs seals were removed and a wood crate was opened to reveal our beautifully preserved APS-42. We look forward to seeing this new artifact in the nose wheel well of 17515.

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