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7 MARCH 2022

THE AEOLIAN-SKINNER PIPE ORGAN

Gentlemen:

What a pleasure it was to spend time with you both in early January. Thank you again for all you did to smooth my path, not the least being Mike's rescue of me from inside a locked organ chamber — an embarrassing first.

For others who will read this, let me state the purpose of my visit. Like the church building itself, the Aeolian-Skinner organ at National Presbyterian is now more than a half-century old. While it has been expanded musically (with additional pipes), and periodically upgraded (with various technological enhancements), the fundamental mechanism has gone largely unaddressed. Now, with the regular appearance of dead notes and other mechanical problems, the Church wanted an assessment of conditions and recommendations for moving forward.

My brief was to offer a cursory review of the organ's condition, and generate a Solicitation of Interest document that might be sent to firms capable of overhauling the instrument. Certain presumptions were built into the nature of this assignment:

- the organ is now 52 years old and at the stage where almost every instrument of its type requires thorough mechanical overhaul;
- musically, the organ gives satisfaction. Thus, the goal of any work is primarily mechanical, though possibly refining certain musical aspects even further
- any work wants to equal the high quality of the original builders, yielding similar longevity;
- between the active music program at National Presbyterian and the use of outside groups, any organ project should incur the least disruption possible, and unfold with all reasonable speed.

Some fix-it patches have been done along the way; without them dead notes would be sufficient in number as to truly complicate any organist's work. Even in my visit, certain critical notes were newly dead from failed leather. So, the time has come.

In writing such reports, observations will include both positive and negative comments. These should be taken in the spirit offered, and certainly not as any criticism of the very dedicated work so many have done over the years to keep this organ front and center in the Church's profile. It's also commendable to see any Church devote a proper amount of money each year to the care of pipe organs. I found an instrument clearly well looked after by its curators, which only pertains when the Church itself supports that work.

EXECUTIVE SUMMARY

Value: The organ should be insured for about **$6 million market replacement value**, as it would likely take about that much to replace this organ from the ground up.

Condition: Thanks to conscientious care and periodic upgrades, the organ makes a basically good account of itself. But the core 1970 mechanism has begun to fail, right on schedule for organs of this type of leather-filled mechanism. Such a renovation might cost anywhere from $2 to $2.8 million, depending on how the Church elects to approach the work.

Historicity: The Aeolian-Skinner Organ Company is arguably the United States' premier maker of pipe organs from 1932 until their closure in 1972. The firm went through many leaders and styles; National Presbyterian's is a prime example of the company's final phase. While refinements have been made since 1970, these embellishments have not diluted the instrument's core style or fundamental artistic content.

Phasing: Some organs lend themselves to phased renovation. Because this one is on two stories, with poor access to the mechanism of the upper level, phasing would be complex and costly. If funding necessitated, some element could be set aside for now. First, the console and electrical systems are in solid shape. If a few problems were remedied, the console would last at least another decade, likely longer, just as it is. Second, the Antiphonal division — all the pipes in the rear gallery — could be treated as a separate phase. Third, the Solo mechanism and pipes are all in fine shape, and do not require overhaul.

Being without an organ brings logistical issues:
—providing an electronic substitute to lead worship while the pipe organ is out
—thinking about the locations of that instrument's console, speakers, and cables
—adding the rental fees into an overall organ project budget

Urgency: Your curator has already made several patch-fixes to failing mechanism. In the recommendations below, I've suggested a few more he might tackle, but only a few. This degree of failure tells us that patches aren't sustainable, and that no time should be wasted in planning a comprehensive organ renovation.

Maintenance: We did not discuss what the Church spends or budgets on organ maintenance. I suggest a minimum of $25,000 annually, half for actual maintenance, the balance set into a sinking fund against future work.

I. DESCRIPTION

When new in 1970, this instrument contained 72 voices (individual sounds), 105 ranks (actual sets of pipes, since some stops play more than one pipe per note), and 5,896 individual pipes. The 2010 enrichment project increased those tallies to 82 voices, 115 ranks, and 6,519 pipes respectively. This is an instrument of considerable size, appropriately matched to the scale of the edifice and its music program.

The organ is found in four general locations:

- basement machinery: the original and added blowers, and preliminary wind regulators;
- main organ chamber, housing the majority of pipes and mechanisms;
- Antiphonal division in the rear gallery, with its own blowers, mechanisms, and pipes;
- the console, with its keys, stops and controls.

II. VALUE

Fair-market appraisals of pipe organs are more confusing than helpful. Pipe organs sell so infrequently as to establish no useful pattern. Moreover, when they do sell, the actual sale prices are usually a fraction of the organ's true worth, because organs are so large and inflexible that the sale price is just the first in a string of expenses — removal, re-engineering, rebuilding, reinstallation — that often equal the cost of an equivalent new pipe organ. Besides, the point seems moot here: National Presbyterian clearly has no wish to part with its cherished Aeolian-Skinner.

Establish an organ's value is important, however, both for insurance purposes and as the basis for other calculations. In this line, the figure we care about is **market replacement value**. If catastrophe struck, how much would it cost to replace this instrument with one of like size and scope from one of today's best builders? I estimate that cost between $5 and $6 million, not including costs the purchaser usually handles directly when buying an organ: site preparation, hoisting, various insurances, and sometimes, shipping, crew housing and subsistence on site. It's not out of the question to imagine such a hypothetical project reaching beyond $6 million.

By contrast, rehabilitating such instruments generally runs about 40% of replacement value.

It would be sensible if the Church's insurance reflected replacement value at $6 million. This replacement figure should be reviewed periodically. Inflation in organbuilding has overtaken Consumer Price Index figures for decades, and prices are liable to go higher still. Recent escalations in the price of tin alone are fairly shocking. Apart from the building itself — perhaps the remarkable stained glass — I see no other single item in the church likely worth as much as the pipe organ.

III. MAINTENANCE BUDGET

Annual maintenance generally runs between ½ and 1¼ percent of replacement cost. In this case, that would suggest $25,000 to $35,000 per year. If a church has the means, the most conscientious approach is to spend half that sum on actual tuning and maintenance, then bank the other half into a sinking fund against future work. I don't know what National Presbyterian spends on maintenance, but $12,500 is by no means unreasonable, particularly as the original 1970 mechanism continues to fail, requiring additional attention.

IV — CAPSULE HISTORY

1964: First contract signed with Aeolian-Skinner, thanks to the generosity of Mrs. John Jay Hopkins in memory of her husband. Multiple designs and a second contract ensue, as church and organ grow in tandem.

1970: The completed instrument is dedicated on April 26.

1987: First console and technology upgrade:
- solid-state coupling
- new drawknobs, tilting tablets, and keyboards fitted
- number of drawknobs increased from 110 to 175 in anticipation of future expansion
- console placed on movable platform
- by this time, the Great 16ft and 8ft reeds are replaced

1989: First musical modification:
- addition of Tuba Major (1933 Aeolian-Skinner), pipes, chest, and bellows from the parted-out Corby Mansion organ
- relocation of State Trumpet to gallery (pipes eventually replaced)

2003: Second console and technology upgrade:
- conversion of entire control system to Solid State Organ Systems MultiSystem I
- console cabinetry cleverly revised to harmonize with the chancel furnishing

2010: Second musical modification:
- add Clarinet to Choir division
- complete 32ft Bourdon with five new pipes CCCC-EEEE, from A.R. Schopps' Sons
- original 32ft Kontraposaune bottom octave replaced with new, full-length pipes, also from A.R. Schopps' Sons, although reusing the Aeolian-Skinner sockets from 1970≥
- new 16ft and 8ft Trumpets on the Great division, replacing second-generation pipes
- new Solo division, with eight sets of vintage Skinner Organ Company pipes, added above Choir organ; all reed pipes reconditioned by Sam Hughes
- to accommodate Solo, new basement blower and bellows installed, together with new duct between basement and organ chamber
- at this time, most other pipes in the organ are simply cleaned but not fully restored

after 2010:
- At some point, the 1987 combination action, which in 2010 had been increased to 64 levels of memory, was further increased to 512 levels.

V — IMPRESSIONS

Musical effectiveness: Clearly, Aeolian-Skinner did considerable legwork with the Harold Wagoner firm in winning a first-class location, with the tall, shallow front-and-center chamber. From here, the organ speaks easily into the nave. The provision of pipes in the rear gallery means that the main organ needn't constantly shout in order to lead those in the rear pews. While the main organ lacks a visual identity, the gallery pedestal provides both visual elegance and musical effectiveness.

Graceful aging: Compared to other Aeolian-Skinners, this one has lasted longer without major mechanical intervention. For example, Opus 1440 of 1965 was restored in 2009, at age 44. Yours is now 52, and will likely hang on a few more years before needing full renovation. That the organ experiences as few problems as it has is testament both to its good initial manufacture and diligent maintenance.

In this instrument, certain elements are particularly efficient and robust. One example is the number of bellows. Had this organ been built by M.P. Möller, there would likely be twice as many bellows, now all needing restoration, with their attendant cost and complication. Likewise, this late Aeolian-Skinner has a simplified approach to windchests, eliminating almost all separate units for larger bass pipes. As a result, there is less mechanism per pipe. That original efficiency now translates into less necessary work.

As for robustness, the large zinc pipes deserve mention. Had Casavant Frères built this organ in 1970, for example, it is likely that many of the larger zinc pipes would have required repair, reinforcement, or replacement. By contrast, every large pipe at National Presbyterian has proven as stout as a steamship. Where pipes are mitered over, for insufficient height, not a single miter shows any stress.

VI — MECHANICAL CONDITION

On first impression, the organ gives a solid account of itself. All the stops play, the console works well, and there are only a few dead notes. Digging deeper, however, it turns out those few dead notes are vital: on commonly-used stops, right in the middle of the compass. And even this good state of affairs masks the fact that Michael Hart has instituted several workaround patches to hide failures of a graver nature, particularly in the Swell and Tuba Major. Thus, upon more reasoned reflection, a sense of borrowed time prevails. While there is no danger of imminent, widespread failure, a renovation is needed soon.

a. *BLOWERS*
Both are of excellent manufacture, made by the best companies of their respective periods.

The original Spencer blower was made in Hartford, by a firm still active and, at one time best known for built-in vacuum systems. Their machines were built to last. The two at Washington Cathedral, dating from 1938, were overhauled within the last decade; the large 1913 unit at Saint Thomas Fifth Avenue was renovated in 2015, and continues to power the new 2019 Dobson organ there. Folks in my area have overhauled dozens of them, with great success. Like the organ itself, they were built to be rebuilt, and, if well rebuilt, will last indefinitely. Multiple fans inside the turbine raise the necessary wind. The blower motor seems happy, if a touch over-lubricated, and continues to turn long and happily after the power has been cut.

The main blower provides wind to an initial bellows called a "static bellows," which provides preliminary storage and regulation before the wind travels upstairs to the Great, Positiv, Swell, Choir, and Pedal departments. This bellows is in the initial stages of failure, with holes developing in its leather corners, called "gussets". **If this bellows were to fail, the organ would be unplayable.** Its rehabilitation is a pressing matter.

The second blower, introduced in 2010, was built by the recently-closed firm of Aug. Laukhuff, in Germany. It raises additional wind for the Solo, 32ft Posaune, and Tuba Major. This too is a first-class machine. However, I question if it is fully raising the pressure asked of it, namely an ideal 13.5-inch or 14-inch static to suit the 12-inch pressure required by the Tuba Major. Not only does this second static bellows barely rise, but its top also flutters, indicating lack of pressure. If this blower isn't putting out enough pressure, it may be possible to run the machine very slightly faster using a variable frequency drive.

The 2010 static bellows for the second blower is in fine shape, being too new for any deterioration to have developed.

Organ blower rooms should be reserved exclusively for organ-related equipment. Even if this room contained only these two blowers and bellows, the space would be snug. But much other material is stored here as well, some organ-related, some not. It would be nice to see all this unrelated material cleared out, any organ items re-claimed by Michael Hart (presumably).

A final easy win would be to install furnace filter on the door, to keep dirt and dust from processing through the wind system and up into the pipes.

Needed work:

- Cleaning and overhaul of main blower
- Restoration of static bellows
- Remedy pressure issue with high-pressure blower
- Clear out room of foreign items, including organ items
- Add replaceable furnace filter to blower room door, to provide cleaner air supply

b. WIND SYSTEM

From the blowers, pressurized wind runs through metal ducts to the organ chambers and the individual bellows in each departments. A new 2010 duct, in heavy plastic (PVC), conveys high-pressure wind from the new second blower.

In a restoration, ducts are cleaned, rubber-cloth connection sleeves renewed, and the whole checked through for cleanliness, wind tightness, and silence. The 1970 bellows in the main organ chamber all appear to be on original leather, another of the ways in which this organ has aged admirably while absolutely showing that age. Newer ones for the Solo and Pedal 32ft Bourdon extension are fine, being too new to have any marked deterioration.

"Tremolos" are the final element in the wind system, devices that impart a vibrato effect. In this instrument, the tremolos are electric motors atop each bellows. An eccentric weight on the motor causes the bellows top to rise and fall. All function, except for:

- the Great tremolo motor does not turn. Its electric relay appears to work just fine, but the unit itself isn't receive 110VAC power. Something to check in the course of a maintenance visit.
- the Solo tremolo is both noisy and ineffective, probably from the motor's being mounted so far to one side of the vertically-mounted bellows that it has little physical advantage in causing the entirety of the bellows top to move.

Needed work:

- Eight bellows, original to 1970, need the usual complete overhaul.
- The Tuba bellows looks recently done over.
- A recycled reservoir introduced for the five added 32ft Bourdon pipes seems less well rehabilitated, and its head is unevenly balanced. This wants attention.
- The Solo main bellows perhaps had some initial failure, and has received over-large gusset patches. Apart from this feature, it seems fine, but its tremolo and weighting want reconsideration to place the motorized unit for greater effect and reduced noise.
- The Great tremolo motor situation wants sorting out.

c. WINDCHESTS

The windchests are the structures on which all the pipes sit. Most of the pipes of a given department will stand on a "main" chest. Larger bass pipes stand on what are called "offset" chests.

The **main chests** are of the pitman variety, which refers to how stops are engaged. This style, developed by Ernest Skinner, has the advantage of speed. The stops can switch on and off as quickly as the notes, while the notes themselves work quickly and cleanly. Beneath each pipe is a leather pouch, topped with a felt-and-leather valve. The leather deteriorates partly from use (flexing up and down), partly from age (drying out). When that deterioration reaches a certain point, the pouches leak enough that they no longer move, and thus no longer provide wind to their affiliated pipe.

Beyond these individual valves, master keying mechanisms, called **primaries**, engage each common note on a windchest: all the middle C pipes, all the middle C#s, and so on — 61 in all. Because these mechanisms work regardless of how many stops are drawn, the primaries are worked often, and thus tend to fail the soonest.

Even my limited survey disclosed a goodly amount of spot repair. In the Swell division, for example, six notes on one primary have failed. For those six, an external magnet has been screwed in place, physically pushing the valve where the leather itself no longer is able to. By this means, the Swell seems to be functioning normally, even with failed leather. One Great stop action is similarly treated, as are several Tuba Major notes.

Beyond that, I encountered several critical dead notes:

Great	8 Principal	B24
	4 Octave	G#21
	16 Trumpet	F6
Swell	8 Viole	G#21, B36
Choir	4 Principal	A34

Reconditioning the main windchests is straightforward; all of the mechanisms was designed for ready removal and rehabilitation. Thus, access becomes critical. The lower-level windchests (Great, Choir, Swell, big Pedal pipes) are, in principle, reachable, although one must work around bellows, ducts, and other obstacles. The second-story windchests for Positiv and Pedal are far more difficult; safely reaching the underside requires first removing hundreds of pipes in those lower departments.

The many obvious failures on the main chests was sufficient evidence that we didn't take any of them apart to explore leather. Further, rather than patching individual pouches, Michael Hart has introduced a little separate windchest in the Swell; when notes of the Hautbois have failed, he has transferred them to this little chest instead.

For the offset chests, we took apart an action of the 32ft Bourdon. There we discovered more spot work. Where the pouch itself had failed, it had been replaced. But its initial primary action had leather original to 1970; one surmises it was still fine when the other was replaced. Now, given various failures throughout the instrument, it's a fair assessment that all leather wants replacement.

When these mechanisms are renovated, certain techniques ensure wind-tightness for decades to come. One involves the gaskets. The originals are of neoprene-impregnated cork, which dries out and loses its capacity for good seal. Today, most restorers replace that cork with packing leather, which is more resilient and tends to seal longer. Then, to ensure that the screws seal tightly, hardwood cross-wise dowels — "dowel nuts" — are typically introduced anywhere a screw enters the chest. The beautiful California sugar pine, out of which so much of this organ is built, is a soft species; screws inevitably strip. Dowel-nutting gives the screws a fresh, long-lasting bite.

Needed work:

- Remove pouchrails and patch leather for these notes:
  - Great 8 Principal B24, 4 Octave G#21; 16 Trumpet F6
  - Swell 8 Viole, G#21, B36
  - Choir 4 Principal A34
- Leave all other releathering for the renovation.

d. *FLUE PIPES*

Of the organ's 6,519 handmade pipes, 5,126 are of the "flue" variety, which operates on the same principle as a referee's whistle. The wind comes through the pipe foot, brushes past a lip, and energizes the column of air inside the pipe into a tone. This action occurs whether the pipe is made of heavy pine and reaches 16 feet tall, or is the size of a soda straw.

The flue pipes in this organ have led a happy life, and looked quite good on my survey. While none of them has been fully reconditioned, the smaller ones look to have been cleaned at least once, likely during the 2010 project. In a thorough overhaul, they will want to be completely reconditioned.

For metal pipes, cleaning is not so different from doing the dishes. Pipes are submerged in hot water together with a mild detergent, washed inside and out. Any repairs or de-denting is done at this time. For stops that have a felt-lined canister top (the Bourdon and Spindelgedackt, for example), the felt is almost always replaced.

Where wood pipes are found to be cracked, they are spline-repaired, and any failed glue joints re-sealed. Some restorers add an additional coat of shellac; others preserve the original finish where it has no need of embellishment. If a pipe has a stopper at its top, now is the time to replace that leather. In such stops as the Great Holzgedeckt and Pedal Subbass, that leather wasn't replaced in 2010. Evidence of failed leather includes paper towels introduced around the stopper edges, and nails driven into the sides of larger pipes, to catch larger stoppers so they don't fall clear to the bottom of the pipe. This condition isn't limited to the original pipes; the excellent new 32ft Subbass pipes also have loose stoppers.

When all this pipe reconditioning is complete in the workshop, pipes are commonly subjected to a shop auditioning, being corrected for speech and timbre as needed. That process is then repeated on site, where tone is reviewed again in the actual acoustics of the church, repeating a process the original builders undertook in 1970.

The 2010 Solo department already contains excellent examples of first-class flue pipe reconditioning: the pipes of the Harmonic Flute and Dolcan Gambas were beautifully treated. This approach sets a standard for the rest.

Needed work:

- Complete reconditioning of flue pipes, save those in the Solo
- Tighten leather stoppers on 32ft Bourdon CCCC to EEEE

e. *REED PIPES*

The 1,3939 reed pipes *do* have moving parts: brass tongues vibrating against brass tubes, much like the cane reeds in an orchestral oboe or bassoon. The refurbishment of reed pipes is more complicated than flue pipes, often involving the replacement of certain elements. In good reed pipe restoration, the pipes are completely disassembled for thorough cleaning; the wooden wedges (which old the tongues securely in place) are replaced with brass equivalents; and the tuning scrolls, often worn out from age, have their metal cut out and replaced with new.

This organ already has excellent examples of reed pipe reconditioning, again in the Solo where the vintage Skinner stops were given this first-class treatment by A. R. Schopp's Sons and the voicer Samuel C. Hughes. This work established a standard that should be applied to all the original reed stops. It's a tribute to the tuners that the scrolls of the various reeds are in commendable shape, clearly conscientiously handled.

Two notes on reed stops:

1. The one voice that sounds truly terrible is the **Antiphonal Trumpet**. It is an imported stop, as were the original Great 16ft and 8ft Trumpets, eventually replaced twice. Is this Antiphonal rank also a candidate for replacement? It was essentially unusable on my visit.
2. The relocation of the Hautbois from Choir to Swell was musically sensible, putting this voice where most organists and much literature expects it. However, the physical transfer was accomplished without providing any upright racking, such as is found for every other set of pipes of this height. Fortunately, the pipes are made of the same robust zinc as found elsewhere, so there hasn't been any collapse. Still, this wants a proper rack.

Needed work:

- Complete overhaul of reed pipes, except:
  - Solo reeds; CCCC-BBBB of the 32ft Contra Posaune;
    Great 16ft and 8ft Trumpets; Choir Clarinet and Trompette
    (all these pipes might get a basic cleaning, but are too recent to require systematic overhaul)
- 16-8ft Antiphonal Trumpet, provide new pipes
- Swell 8ft Hautbois, furnish upright rack

f. *EXCHANGED PIPES*

Several of the 1970 stops are not in their original positions. The Great Holzgedeckt and Positiv Bourdon were switched at some point; the Choir Hautbois moved to the Swell as mentioned above. Some changes were made from the outset: the Antiphonal 2ft Flachflöte originally being on the Great, now switched with its 2ft Octave. At some point, the scales of the Great 8 and 4 principals were increased by one note. These various switches reflect a desire to bring a few eccentric details of the 1970 tonal design into line with more accepted practice and useful effect.

In no case do I sense that any of these things needs or wants reversal. Moreover, various other replacements, such as the later Great 16ft and 8ft Trumpets, are nicely executed, offering variety while not straying from the instrument's overall aesthetic. The sense one gets in all this work isn't a desire for wholesale change, but an ongoing refinement to make unsuccessful things work well and to make good things even better.

Finally, hats off for the courage to extend the 32ft Bourdon down to low C in real pipes. It would have been simpler to furnish such tones digitally. Not only does the use of real pipes show integrity, but these good ones make a fine account.

g. *WIND PRESSURES*

Mike mentioned that in 2010, Larry Trupiano and Bynum Petty increased pressures give added energy to the tone, and that these changes were welcomed. I found certain key pressures, however, to be considerably higher than factory settings, notably the Swell (factory 3.5" — present 4.25") and Choir (factory 3.5" — present 4.1"). In the factory documentation provided to me, is clear on this, and shows no later revisions.

In particular, the stops of the Swell have a stridency that seems initially exciting, but in practice may be wearing. In considering this matter, Todd's comment about the Swell and Choir — both being rather too forward in tone for the best use in choral accompaniment — sticks in mind. I wonder if these pressures want reconsideration and reduction.

h. *EXPRESSION*

Change of volume in organ tone is brought about in two ways. Either more stops are brought on, building up blocks of sound. Or, certain stops are placed inside of louvered enclosures, whose movement causes the tone to swell or recede. In this instrument, all of the pipes of the Swell, Choir, and Solo departments are enclosed behind such louvers, or swell shutters, which are controlled by the rubber-coated balanced pedals on the console. The Choir and Swell shutters were originally operated by wind-operated accordion engines. Those have been superseded by electric motors, of the type installed in 2010 to operate the Solo shutters.

The Swell and Choir have their original shutters, which open a full 90° and give a very clear effect when open. Each department has a full set of shutters facing forward, and a few additional ones facing sideways, probably so that the effect of these departments was not overly directional. In the case of the Swell, the introduction of new 32ft Posaune pipes meant that those side-facing shutters could no longer open. They have been permanently closed and delinked from the main shutters.

Returning to Todd's concern that the Swell and Choir seem too prominent for choral accompaniment. If pressure adjustment doesn't seem correct, another possibility might be to reprogram the shutters to open a bit less fully. Certainly, with the electric motors, this is an experiment easily tried and readily reversed.

Looking at the Solo shutters, I ponder if this assembly was, like the Tuba Major, recycled from the Corby Mansion. At first, I wondered if enough sound got out. But in the playing, I don't think egress is any problem here.

i. *CONSOLE*

Very little of the original Aeolian-Skinner console remains, most elements being either fully remade or replaced altogether. The current console has many drawknobs, new technology, and spiffed up cabinetry that better matches both the color and distinctive style of other chancel furnishings. As with the original purchase of the organ in 1970, solid choices made along the way mean that none of this mechanisms needs attention now. The superb keyboards, tilting tablet actions, and drawstop actions, all from Harris Precision Products in Whittier, California, work beautifully. In particular, the keyboards are likely to last a good long while.

A few issues want consideration:

- The contacts for the thumb pistons, as provided by Harris, have proven notoriously unreliable — a frustrating gap in the otherwise superb quality of components from that company. Todd reports that already a number have been replaced; during my visit, Positiv to Great reversible was dodgy.

  The new standard mechanism for thumb pistons dispenses with contacts to use either sensors of the reed-switch kind (as provided by P&S Organ Supply in England) or an optical sensor of the Hall-effect variety (as provided by Arpad Muryani, and now available from Organ Supply Industries or through independent houses). Given that the console really doesn't require attention, I recommend that the piston slips be rebuilt with either of these other types.

- Two controls — the All Swells to Swell and the Great to Positiv Transfer — are not affected by any of the combination pistons. Conventional wisdom suggests that it would be wiser for these controls to act like any other console control; the system should be reprogrammed to capture them.

Finally, the few errors in console function are so trifling it's almost embarrassing to mention them. But for the record:

- The ANT MUTE toe stud doesn't function
- The Pedal 32 Fagotto reversible instead reverses the Choir 16 Fagotto (which makes a kind of sense, given there is no 32ft Fagotto)
- The Pedal 4ft Schalmei or 2ft Schalmei borrows aren't muted by REEDS OFF
- The Positiv II Sesquialtera and V Principal Cornet aren't muted by MIXT's OFF

Needed work:

- Revision of piston slips with sensor technology
- Reprogram combination action to include
  All Swells to Swell and Great / Positiv Transfer

j. *PERCUSSION*

The organ's percussion tones are created digitally, from equipment by Walker Technical Company, the industry leader for such things. Installed in 2010, this equipment should last a long while.

VII. ENVIRONMENT

a. *BUILDING FABRIC*

Both the blower room and main chamber are in excellent condition. In a renovation, it would be logical to clean all surfaces. In the main chamber, the grille cloth will want vacuuming, as dirt often builds up on such material. The cloth should be evaluated for possible replacement at this time, although the sections I examined seemed fairly sturdy.

Also, may I point out that the main chamber entry hatch might want an internal handle fitted, to eliminate the possibility of locking one's-self inside the organ chamber, and having to phone for help?

b. *CLIMATE*

Stability of temperature and humidity are critical factors in the health of any pipe organ. The pitch depends upon stable temperatures; good operating condition relies upon a comfortable range of relative humidity (30-70%). Tuning should be carried out at the temperature established for services. Having been so tuned, the organ should generally come to pitch when the performance temperature is attained. In a clean organ with even climate, proper humidity, and well-made and -voiced pipes, an organ should hold in steady tune and require only periodic tuning.

National Presbyterian's climate seems hospitable, not only kept at a steady temperature but with both humidity added in the winter and removed in the summer. This avoidance of extremes has surely contributed to the longevity of the mechanism, particularly the leather elements.

During my visit, the heating system seemed to be on overdrive. It was almost 75° on Sunday night, and the organ's tuning compromised as a result. On Monday morning, back at 70°, divisions, pitches, and tuning had largely come back together.

Two possible considerations might be an air circulation system within the organ chamber, and a humidification system specifically for the organ chassis.

A circulation system would draw air from the organ's lower level, bring it to the top of the chamber, and have it fall gently down the front and into the side Swell, Choir and Solo enclosures. Such systems have proven very effective at de-stratifying multi-level chambers. This is a question for Michael Hart, who has the experience to know whether such a system would be helpful.

An organ-specific humidification system would involve placing a humidifier in the blower room. Sensors within the instrument would indicate whether the chassis' humidity was falling below acceptable levels. With the organ powered down, the blower would turn at very slow speed to flow humidified air through the organ's chassis. Small exit-valves installed throughout the organ's mechanism (closed when the organ is powered up, open with the power off) would allow a gentle, steady circulation of humidified air.

Again, the desirability of such a system seems a question best put to Michael Hart. Given that the entire church climate is humidified, such may not be needed here, as it has been elsewhere. While such systems are relatively inexpensive and easy to install, they should be considered only if they will materially benefit the mechanism.

c. *CLIMATE*

Typically in such reports, I make general comments about acoustics, as, sadly too often, most churches have poor acoustics, compromising the spoken word, choral music, congregational singing, and the sound of the organ. This is clearly no issue at National Presbyterian, where everyone seems delighted by the acoustical environment.

d. *VISUAL APPEEARANCE*

I would not recommend any alteration to the organ's visual appearance, either in the chancel or the gallery. The organ is of one with the architect's design.

VIII. SHORT-TERM WORK TO BE DONE NOW

1. Blower room:
    a. Patch main static bellows
    b. Clear room of non-organ items.
2. Wind system:
    a. Rectify non-functioning Great Tremolo
3. Windchests:
    a. Remove pouchrails and patch leather on
        1. Great 8 Principal B24, 4 Octave G#21; 16 Trumpet F6
        2. Swell 8 Viole, G#21, B36
        3. Choir 4 Principal A34
4. Flue pipes:
    a. Tighten stoppers on 32 Bourdon CCCC-EEEE
5. Reed pipes:
    a. Provide upright rack for Swell 8 Hautbois
6. Wind pressures:
    a. Experiment with adjusting Swell and Choir wind pressures back to factory settings, retuning a few representative stops in the process.
7. Console:
    a. Reprogram combination action to include All Swells to Swell and Great/Positiv Transfer.
    b. If the thumb pistons continue in their unreliability, refit with sensor technology ahead of the renovation.

IX. OPTIONS FOR RENOVATION

1. **Perform a complete renovation.**
    a. Most of the organ would be removed, leaving in place the Solo division.
    b. The console might also be removed, simply to make room for the console of a temporary digital organ.
2. **Perform a partial renovation.**
    a. The Great, Swell, Choir, Positiv and Pedal would be removed, leaving in place the Solo division, and postponing renovation of the Antiphonal.

I do not see how any other partitioning of the job makes much sense here.

X. THE BIDDING PROCESS

It is common in the Church to treat pipe organ work like any other task of renovation: HVAC, the roof, general renovation. "Get three bids."

Work on a pipe organ, however, really should be handled as one would commission or restore a piece of art or architecture. Partly, it is that you *are* dealing with a musical work of art. The quality of work and track record of the renovator is what matters most, not price. When National Presbyterian bought the best in 1970, it paid off. The same philosophy should apply here. The simple fact of three prices only clouds the deeper, truer work of really figuring out which firm is best suited to work with this instrument and Church leadership.

I am also sensitive to the parlous state of the US pipe organ trade just now. The firms who build and renovate pipe organs are at a delicate crossroads within a shrinking industry. In the past, with staffs of 100 or greater, and business to spare, organ firms could far more readily absorb the costs of sales work. Today, apart from the supply houses, no US organ firm has more than 25 employees. The numbers, both in sales and personnel, simply aren't there. Thus, sales work takes a genuine toll, in time, resources, and morale.

All these factors lead me to recommend, most strongly, that National Presbyterian treat this project and its artisans in a non-commercial manner. Offer a stipend to cover at least some of the travel and time it will take for these folks to get to Washington and survey the organ for bidding purposes. I suggest $2,500 per bidder. These firms will likely send two men to spend two days looking over the organ. $2,500 won't begin to touch the actual costs of their time and expenses, but it will signal exactly the sort of goodwill that National Presbyterian, in return, should expect from anyone working within its walls. I can furnish a Bidding Document so that each proposer responds to a framework, which for this instrument is quite straightforward. For this sort of work, I don't believe in rigid Requests for Proposals, but rather a basic outline of the desired result coupled to a few technical specificities, all of which are mentioned above.

You've given a clear indication that the quickest possible timeframe, and least disruption to the music program, is highly desirable, particularly as things ramp up again after the Covid-19 era. The country abounds in fine restorers, some of whom have tackled very large jobs. But most of those shops are small, between four and seven people, and that sort of manpower would tend to stretch this renovation beyond the two-year point. The larger firms who do this sort of work are:

Foley Baker, Inc.
42 River Road
Tolland, Connecticut
800 621-2624, contact Michael Foley, mikefoley@foleybaker.com
Renovations (among many others):
- Harvard University, The Memorial Church (1930 Skinner)
- Duke University (1932 Aeolian)
- University of Minnesota (1932-33-34-36 Aeolian-Skinner)
- The First Church of Christ, Scientist (Mother Church), (1951 and 1952 Aeolian-Skinners)

Schantz Organ Company
Post Office Box 156
626 South Walnut Street
Orrville, Ohio 44667
Contact: Jeffrey Dexter, jdexter@schantzorgan.com
Renovations (among many others):
University of Chicago Rockefeller Chapel (1928 Skinner)
Severance Hall Cleveland (1931 Skinner)
Melbourne Town Hall, Australia (1929 Hill, Norman & Beard)

If the Church insists on three bidders, let us discuss the matter further.

XI. BUDGET and FUNDRAISING

Proposal numbers from the firms above will be one piece of a larger project budget. The principal additional charge will be renting a digital substitute while the main organ is out. The above firms do all their own rigging and hoisting, and offer turnkey proposals, so it's hard to think what other costs a project might entail.

Then, apart from the usual sources within the congregation at National Presbyterian, is it farfetched to think that such institutions as the Washington Chorus or the Washington Bach Consort might be induced to contribute to a renovation? Yours is an unusually well-used space, and many receive benefit of the Aeolian-Skinner organ.

★ ★ ★ ★ ★

There is much information and detail contained above. Please don't hesitate to ask for any clarification or amplification. And finally, thanks again for such a warm welcome and our many good conversations, which I trust will continue.

Yours sincerely

Jonathan Ambrosino

enc.: photos
letter of solicitation for bidders