

WHEN THE PAST REPEATS ITSELF, DO YOU LISTEN?

Please see Jehoshaphat Research's Disclaimer at the end of this report before reading.

With this report we are uncovering the results of a years-long investigation of BWX Technologies (BWXT). The decision to go public with these findings now rests mainly on two beliefs:

- A. BWXT's CFO and Chairman both gave notice of resignation unexpectedly in Q421. These two were also in senior roles at the inception of the disaster now known as Babcock & Wilcox (BW, spun off from BWXT in 2015). BW's stock today is about 90% lower than at spinoff, thanks to projects that conveniently "started" souring almost immediately after BWXT spun them off. The signs of trouble at BW looked a lot what we've discovered at BWXT. In other words, BWXT looks like the next BW, and the guys who have seen this movie before are leaving before the end of the show.
- B. We have unearthed serious problems at BWXT involving financial accounting practices. Some of the liberties taken here include changing project estimates in a way that engenders higher reported profits, altering cost accounting schedules, and constantly moving goalposts on capex inflation. We think BWXT is hiding project losses, inflating profits, and misrepresenting free cash flow power across the business, all to the detriment of its shareholders.

If you're reading this report, you're likely smart enough to understand that a fact pattern like this does not happen by accident. We have alerted BWXT's auditors, the press, and others who will be interested in these discoveries. We are available at info@jehoshaphatresearch.com for questions.

	BW	BWXT
Falling revenue quality w/ unbilled DSO surge	√	√
Bizarre pattern of "helpful" contract accounting revisions	√	√
2 specific senior leaders creating distance from business	√	√
Heavily leveraged	√	√
Inflating earnings w/ changed depreciation schedule		√
Years of moving unbilled revenue goalposts		√
Years of moving capex goalposts		√
Years of moving operational goalposts		√
Stock down ~90% and accounting investigations	√	TBD

Price: \$48	“True” Leverage 3.5x	Mkt Cap: \$4.4bn	ADV: \$30m
FCF Yield: (Negative)	Short Interest: 2% of float	Insider Ownership 0.4% of total	View: Equity Short

EXECUTIVE SUMMARY

1. BWXT is playing a multitude of accounting games, especially around long-term projects. Its earnings are materially overstated and its free cash flow won't rebound as investors believe.
 - If you owned stock in a company driven by fixed-price, long-term projects, and you were told that it exhibited all of the following characteristics:
 - 27 straight quarters of positive project accounting revisions (no other company in the peer group even comes close), swelling operating income by nearly \$300m
 - In 2018, management said high capex would drop back to baseline in 2 years. In 2019 they said 2 more years. In 2020 they said 2 more years. In 2021 they said 2 more years...all of this goalpost-moving being worth ~\$600m in “unexpected” capex
 - Similarly moving goalposts for working capital as it drains cash worth ~\$200m
 - A purposeful change in accounting policy that inflates EBIT by ~\$27m, annually
 - An explosion in unbilled DSOs from the low 30s to the high 70s
 - The CFO and Chairman both giving notice of resignation as these issues crest

Would you be intellectually honest enough to ask, “What is going on here?”
2. The BWXT situation today resembles the BW situation just before its implosion.
 - BWXT dumped BW on the market in a 2015 spinoff, and BW stock went on to fall ~90%.
 - The cause of BW's death spiral was a series of horribly mispriced projects – projects that appeared to be doing well until shortly after the spinoff.
 - Investors could have seen BW's implosion coming had they paid attention to the warning signs – warning signs that look a lot like BWXT's today. BW exhibited the same stresses on project working capital and oddly persistent positive accounting revisions.
 - The departing CFO and Chairman were in similar roles at BWXT when it owned the BW portfolio and must have been involved with it prior to spinoff.
3. BWXT's balance sheet is more levered than investors think.
 - Management and the sell-side talk about BWXT as “2.7x levered.” This calculation fails to account for an underfunded pension and environmental exposure obligations. Leverage is really ~3.5x.
 - Clawback payments for COVID relief are now beginning, government cash reimbursements are declining to lower levels, and the company has toned down previous promises about working capital recovery. A single late customer payment seems to have necessitated a bank overdraft.
 - Given its dividend, BWXT has less room for balance sheet pressure or cash flow weakness.
 - BWXT's required maintenance capex is likely significantly higher than the company claims, meaning free cash flow expectation for the “out years” is significantly overstated.

4. Some investors own BWXT because of the moly-99 story. These investors are part of our short thesis.
 - If you are a bull on BWXT, you may mistakenly believe that BWXT will be selling certain medical imaging isotopes by late 2022 and making money on it in later years due to chronic undersupply.
 - BWXT's timeline for FDA approval within months of submitting its application is not realistic. A major competitor required years to work through this process. BWXT has already started moving these approval goalposts, of course.
 - The capacity picture for moly-99 is moving from undersupply to glut. One FDA-approved, commercialized competitor is already in the process of adding ~50% to total capacity. BWXT intends to join the fray and add more, as do other newcomers.
5. Valuation: Assume that we're utterly wrong about all of this. The stock is still a ripoff.
 - Assuming BWXT capex actually were to fall to ~\$100m as management has been saying, this impressive reversal would still yield only \$160m or so in free cash flow. Today's price is a high-twenties multiple on that aspirational FCF number.
 - BWXT's peer group trades at a high-teens multiple of this year's FCF (not aspirational).
 - BWXT is also highly levered versus its peers, so its EV/FCF is even more of an outlier.

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- 4. Only Homer Simpson Could Call This Stock Cheap**
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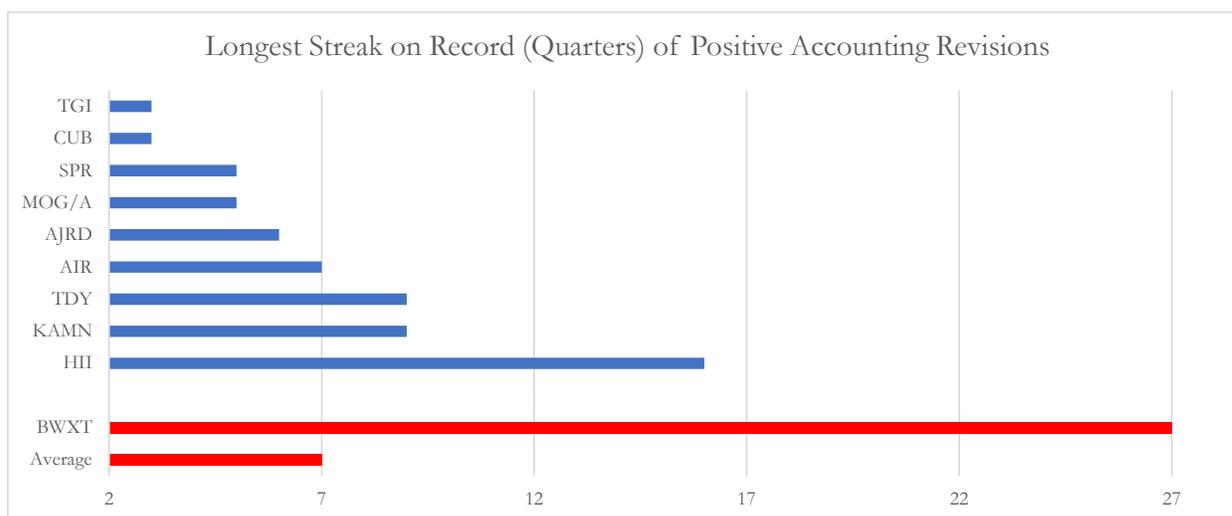
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PROLOGUE: CERTAIN EXHIBITS

These are some of the key charts and text snapshots in this report for those who want a quick scan. They will make more sense as you come across them again in the relevant sections and they are described with context.

- BWXT’s project accounting revisions vs peers, using the peer group that BWXT uses in its proxy. This chart is a visualized, summary version of a table we have in the section on project accounting revisions. It shows the longest-ever streak, at any time, of net-positive project accounting revisions for each company since 2015:



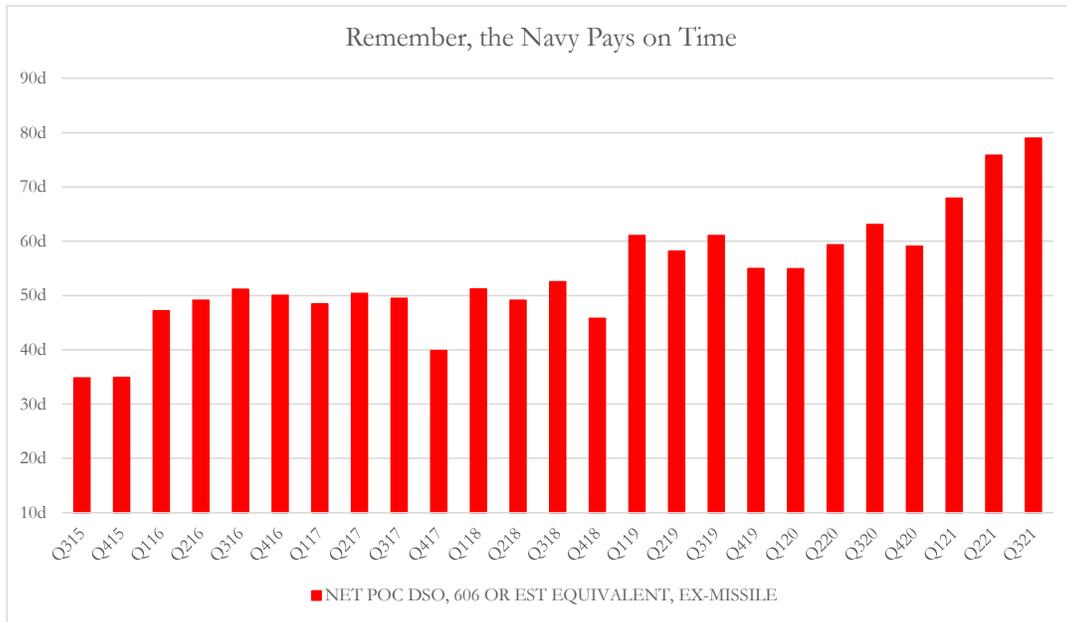
In a world where all of BWXT’s peers take periodic hits to their P&L as they update their project estimates, BWXT stands alone with an unblemished track record of exclusively positive “revisions” now going on seven years. Each quarterly revision to a project’s ultimate profitability, like the initial estimate, reflects judgement on the part of company management. This streak is too good to be true and we will devote considerable time to explaining why later in this report.

- BWXT’s history of moving the goalposts on capex. For this summary below, we pick just a few of the clearer selections showing management’s ever-changing assessment of its “peak” capex year. These are management’s words, not ours. To us, they say that BWXT has been understating its ongoing maintenance capex and kicking the can down the road on when to acknowledge this (and now it’s the new CFO’s problem):
 - Q118: “But the -- as far as – this **[2018] will be the high** of our capital [expenditure], and I think it’ll start going down.”
 - Q418: “So as far as capital, right now, we’re in a capital year of roughly [150], and we feel that, that will probably **be sustained in '19.**”
 - Q220: “**Following 2020**, capital expenditures are anticipated to **start** a downward trajectory...”

- Q321: “And Peter, to take the capital question, you've asked about capital for the remainder of **[2021]**. We said about \$250 million for the year. We said next year, which is '22, would be less than that... [and continue declining from there].”

We have a table, later in this report, noting every moved capex goalpost over the past five years with far more detail and explanation.

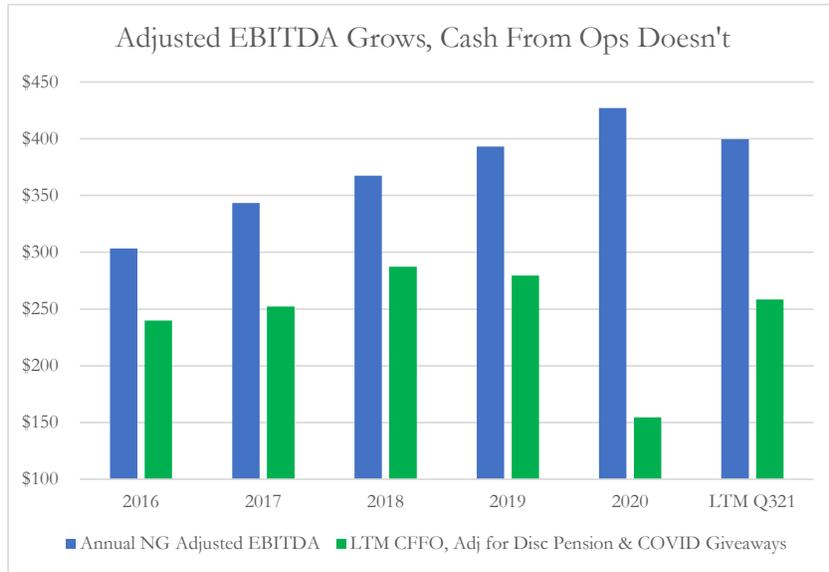
- BWXT’s explosion in net unbilled DSOs, which are driven by revenues recognized in excess of billings. We note that the US Navy is BWXT’s largest customer (by far) and therefore a rising DSO does not seem to be evidence of mere collection slowness. We adjust the net DSO for (remove) the minor impact of the missile reserve taken in Q318:



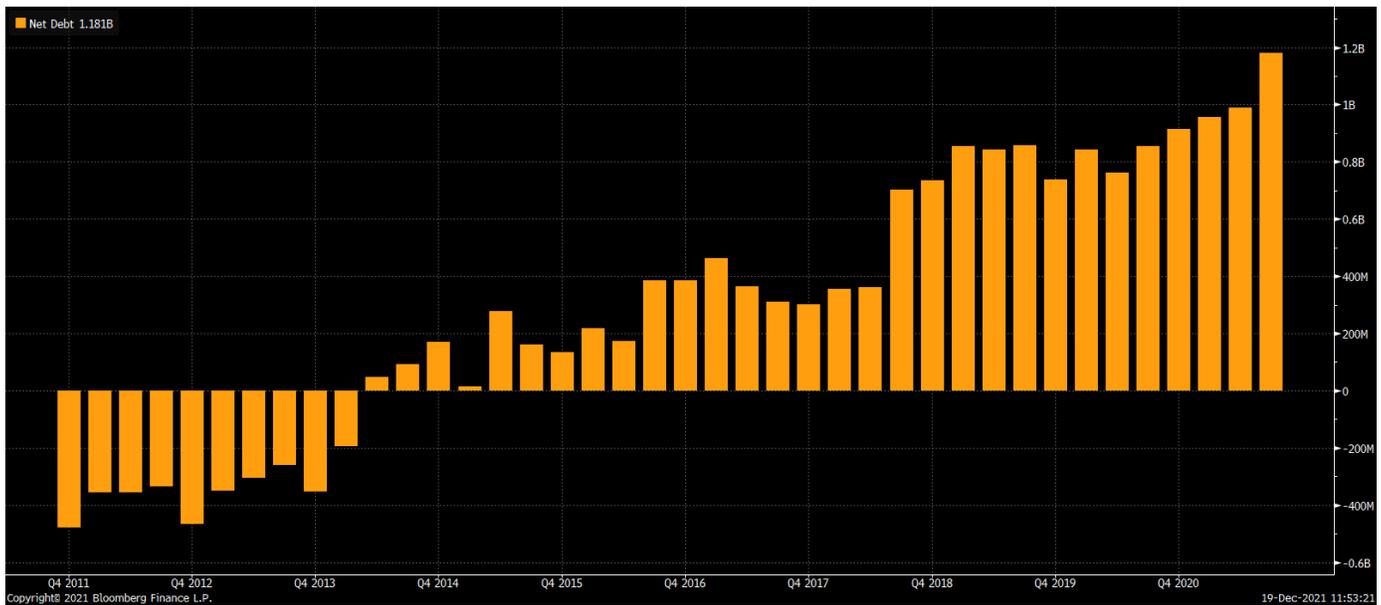
- BWXT’s ever-moving timeline for FDA approval of its moly-99/TC-99 medical isotope products. This refers to management repeatedly “updating” its expectation for when FDA submission will happen and when FDA approval is expected:

	Q118	Q218	Q318	Q418	Q119	Q219	Q319	Q419	Q120	Q220	Q320	Q420	Q121	Q221	Q321	Q421
FDA submission			mid-2020									2H21		end-2021	Q122	Q122
Approval/first sales	late 2019	late 2019	Q121					TBD	mid-2022			mid-2022				end-2022+

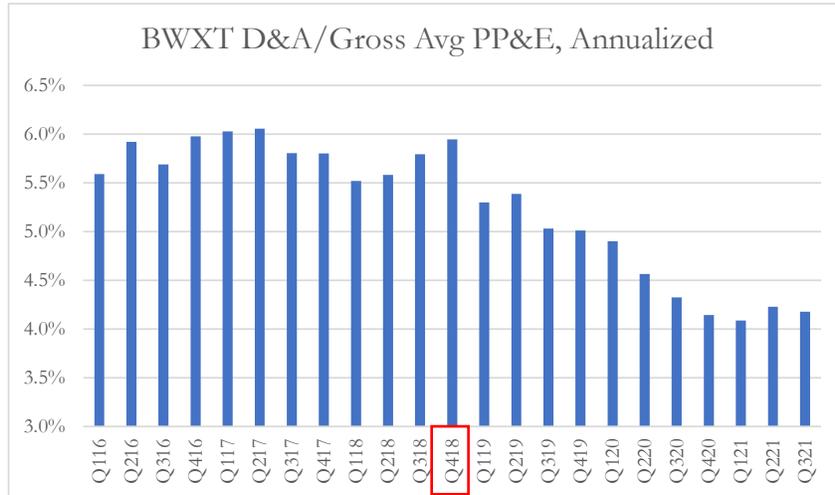
- BWXT’s cash flow from operations, adjusted for COVID subsidies and discretionary pension contributions, compared to its Adjusted EBITDA:



- BWXT’s multi-year transition from cash-rich balance sheet to highly levered one:



- BWXT’s falling depreciation as a percentage of gross PP&E, highlighting the quarter in which an apparent depreciation accounting change was disclosed. We estimate that this discretionary accounting change is worth ~\$27m of annual EBIT to BWXT:



BWXT'S ACCOUNTING GAMES COVER UP PROJECT PROBLEMS AND ENABLE UNREALISTIC EPS TARGETS

We believe that BWXT has been using aggressive accounting for years to flatter its earnings, inflate its stock price, support its debt burden, and delay acknowledging project challenges. We hold this belief primarily because of our forensic research on BWXT's financials, and secondarily because of our industry investigation into various nuclear projects which dovetails with our forensic findings.

The CFO and Chairman both giving their notices of resignation close together, which would raise a serious question in any event, is more concerning in light of our forensic findings.

Much, but not all, of our accounting criticisms relate to accounting for long-term projects. These are the same type of projects whose latent losses blew up B&W, a company that BWXT spun off just in time to dodge said explosion.

A slow train wreck of project (unbilled) DSO growth is not a coincidence

A classic “tell” for project-based companies that are recognizing revenues aggressively is the expansion of unbilled contract receivables relative to reported contract revenues. Readers who have invested in the E&C space for a long time will recognize names such as SNC Lavalin, Granite Construction and – of course – Babcock & Wilcox as great examples of such. These stocks (SNC.CN, GVA and BW) all imploded due to massive losses on long-term projects, and astute short sellers were there (or astute long holders got out of the way) well in advance because they had observed this disproportionate growth in unbilled receivables relative to reported revenues without a good explanation.

If you're recognizing the same amount of revenues in one accounting period as in prior accounting periods, but you're sending out fewer invoices, that's obviously a red flag. And when your key customer worth 75%+ of your revenues (the US Navy) is known for prompt and reliable paymentsⁱ, it's unlikely that any buildup of unbilled receivables is due to collections delays. The question of revenue recognition aggressiveness must therefore be raised.

This will take some effort to unpack and demonstrate visually, so bear with us. We'll start with the simplest version of this observation and go from there. In this first graph, we see unbilled DSO (known by some analysts as PoC DSO) for BWXT, net of any advanced billings. Especially in the past 3 years, note how these DSOs have gone up 50%:



Source: Jehoshaphat Research estimates based on 10-Q and 10-K filings. Underlying calculations displayed at end of this subsection.

This chart above shows net DSOs using percentage-of-completion contract assets and liabilities only. It adjusts certain numbers for the impact of an accounting change and/or the known or estimated impact of a one-time loss reserve for missile tube repairs. The formula is as follows for each quarter:

(Contracts In Progress - [Advance Billings on Contracts - Incremental Missile Reserve]) / Total Revenues * 90

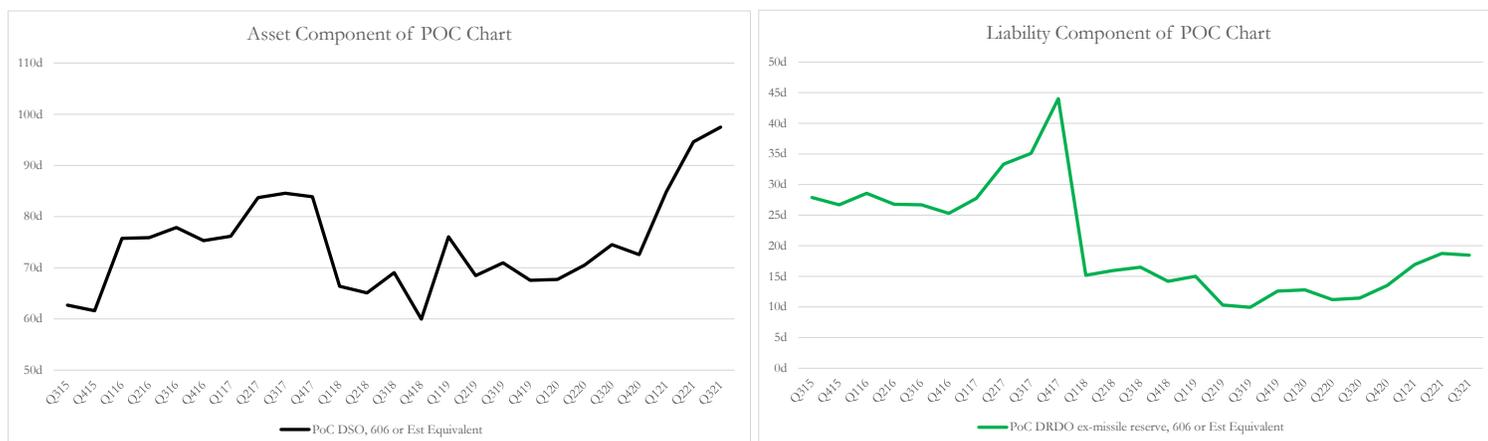
Some explanations for the above:

- Why do we start the chart at Q315? That's when the spinoff of BW took place. We have some piecemeal numbers prior to that, but most of the pre-spin history includes the troubled Power Generation business that BWXT no longer owns.
- Why do we use contract assets and liabilities, but not trade receivables? The Contracts in Progress assets and Advance Billings on Contracts liabilities are generated in percentage-of-completion (long-term contract) accounting. The vast majority of the Contracts in Progress assets at BWXT are Unbilled Receivables, and the entirety of the Advance Billings on Contracts liabilities are exactly that. Unbilled Receivables are different from Trade Accounts Receivable in that they relate to the portions of contracts where revenue has been recognized ahead of a bill being sent.
 - a. (Experienced observers may point out that we're using total company revenues instead of just over-time revenues as our denominator. Prior to the institution of ASC 606, this distinction was not available, so we wouldn't be able to compare apples to apples if we used only one of these two categories. However, the vast majority of revenues for BWXT are earned over time instead of point-in-time, so the distinction isn't important anyway. The only reason we mention this is to advise the accounting veterans that, yes, we did catch this.)
- Because our "net unbilled DSO" (or you might call it "net PoC DSO") uses only the unbilled receivables generated by BWXT instead of all receivables, its inflation over time is more concerning

than if this were just standard DSO inflation. More judgment is used by company accountants in recognizing unbilled revenues on long-term contracts than is used in recognizing point-in-time sales that create regular trade receivables. **The chance that something is wrong in the accounting is higher when you're using unbilled DSOs than when you're using regular DSOs. (Remember SNC, GVA, etc.)**

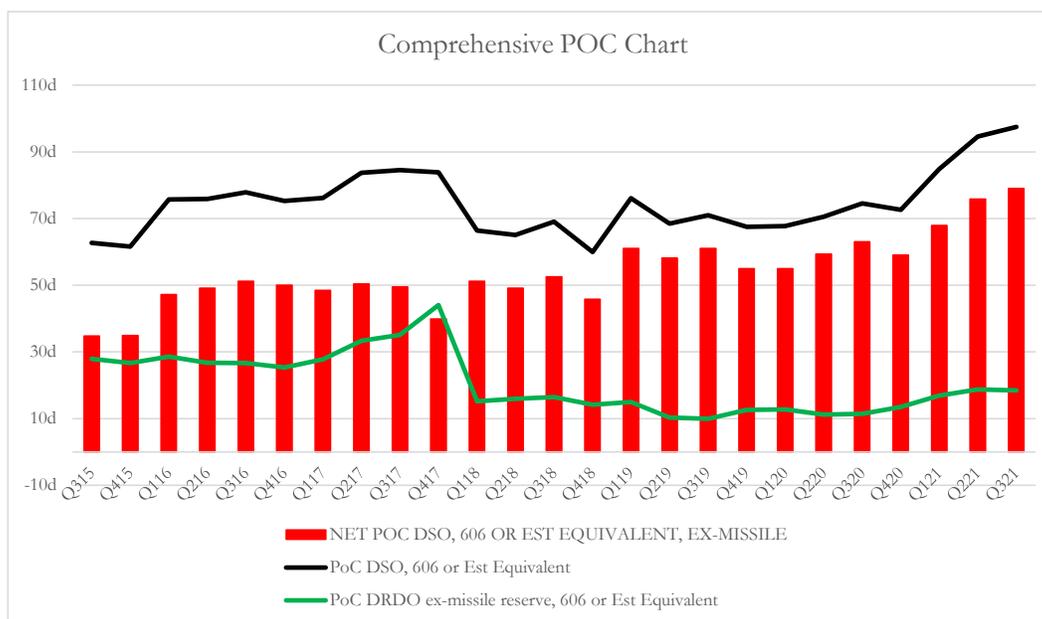
- Why do we remove the missile tube reserve from our liability calculation? This was clearly a discrete event that created a sudden \$27m reserve in Q318, which was then worked down over time. The chart wouldn't change much if we didn't exclude this (the trend to date would look mildly worse). We think it's appropriate to remove it however, as it was a one-time event in a business BWXT is no longer in and it doesn't tell us much about the larger trend in the business. We assumed that the missile reserve was worked down at a relatively steady pace until the repairs were completed in late 2020, consistent with various statements from management.ⁱⁱ
- How do we adjust for accounting standard 605 moving to 606? We put this in the appendix.ⁱⁱⁱ

All that being said, let's disaggregate the "net" unbilled DSO into assets (gross unbilled DSO) and liabilities (gross advance billing days):

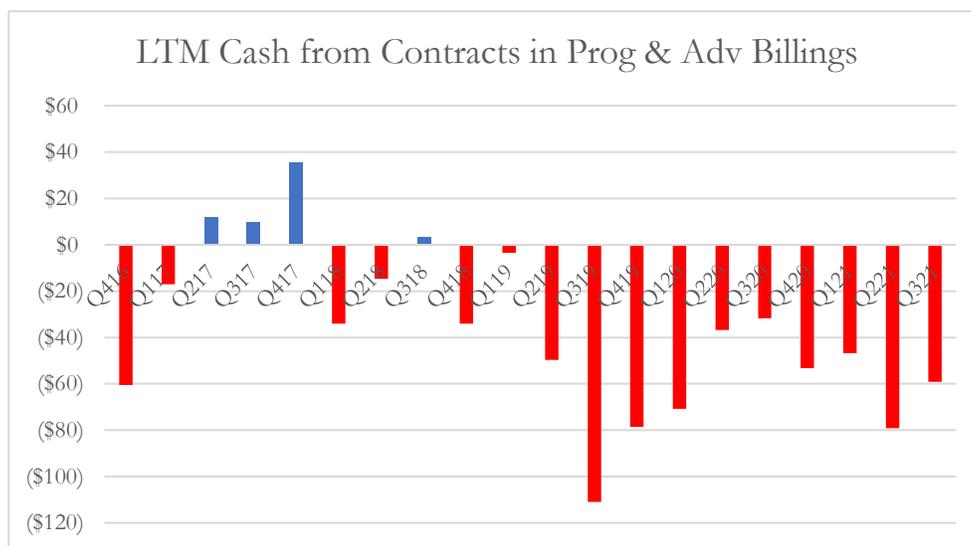


The chart on the left shows PoC DSOs and the chart on the right shows PoC DRDOs (“deferred revenue days outstanding,” which is commonly used language for the liability side of calcs like these; we could also call it Advanced Billing Days Outstanding if we wanted). The fact that the left line has been going up a ton while the right line has trended flat to down over time is extra concerning; if you're recognizing revenue faster and faster relative to your ability to send out the bills on your projects, this is exactly what you'd expect to see in the PoC billing metrics.

Now if we put them all together:

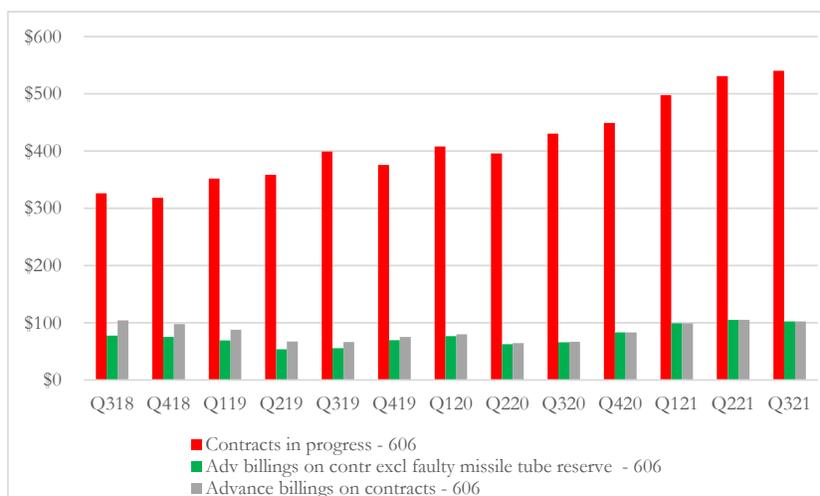


And if we want to see the impact on cash flows from these changes, on a rolling LTM basis (straight from the statements of cash flows):



The cash consumption from contracts in progress is especially concerning in the period from LTM Q3'19-on, since the company has had limited organic revenue growth since then.

Yet another way to look at this trend is simply to eyeball the growth in the PoC assets and liabilities. From Q3'18 to Q3'21, **contracts in progress (virtually all unbilled revenues) have grown from \$326m to \$541m, or by \$215m, but advanced billings excluding the missile tube reserve have grown only by \$24m** (they've had no growth if we include the missile tube reserve):



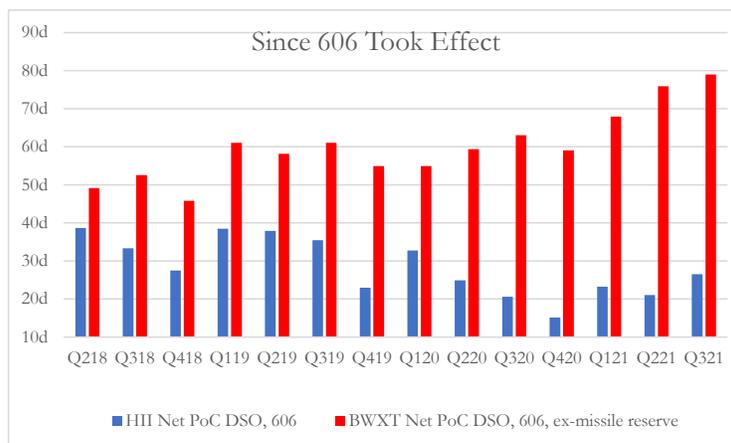
Our belief is that BWXT is aggressively recognizing revenues before it can send the bills out, in essence pulling forward (if not creating out of whole cloth) revenues.

This explanation would certainly dovetail with the aggressive project profitability revisions we discuss in this report, as new profits are created without accompanying cash inflows from such revisions. **While BWXT doesn't provide much detail on its revisions, its peer HII does – and here's a perfect example of HII's "catch-up adjustments" (project profitability revisions) flowing directly into its net contract assets:**

[HII]'s **net contract assets decreased** \$86 million from December 31, 2019, to September 30, 2020, primarily resulting from an increase in contract liabilities **due to unfavorable cumulative catch-up adjustments and billings on certain U.S. Navy contracts.**

HII in other words is saying, "we took a negative project revision and it reduced our contract assets," which reduced HII's unbilled (or PoC) DSOs. **BWXT's unbilled DSOs, by contrast, have gone on an extended trip to the moon while its project revisions have been stubbornly positive for years.**

Speaking of HII, let's compare its net PoC DSOs to BWXT's, just for good measure:



Source: Jehoshaphat Research calculations of straightforward net PoC DSO for HII (Contract Assets less Contract Liabilities divided by Revenues x 90)

As promised, the underlying calculations for the BWXT DSO graphs:

	Q315	Q415	Q116	Q216	Q316	Q416	Q117	Q217	Q317	Q417	Q118	Q218	Q318	Q418	Q119	Q219	Q319	Q419	Q120	Q220	Q320	Q420	Q121	Q221	Q321
Total Revenues - 605	\$359	\$364	\$365	\$402	\$380	\$404	\$428	\$410	\$419	\$430	\$466	\$440	\$408	\$428	\$417	\$471	\$506	\$501	\$542	\$505	\$520	\$557	\$528	\$505	\$499
Total Revenues - 606											\$458	\$439	\$426	\$478	\$417	\$471	\$506	\$501	\$542	\$505	\$520	\$557	\$528	\$505	\$499
Contracts in progress - 605	\$267	\$266	\$324	\$358	\$346	\$357	\$382	\$401	\$414	\$421	\$365	\$349	\$352	\$334	\$352	\$359	\$399	\$376	\$408	\$396	\$431	\$449	\$498	\$531	\$541
Contracts in progress - 606										\$261	\$337	\$317	\$326	\$319											
Advance billings on contracts - 605	\$141	\$138	\$146	\$153	\$144	\$147	\$167	\$186	\$198	\$246	\$117	\$122	\$150	\$147											
Advance billings on contracts - 606										\$73	\$77	\$78	\$105	\$98	\$88	\$67	\$67	\$75	\$80	\$65	\$67	\$84	\$99	\$105	\$102
Missile tube 1x reserve (or est) in adv billings													\$27	\$23	\$19	\$13	\$11	\$5	\$3	\$2	\$1	\$0	\$0	\$0	\$0
Adv billings excl 1x missile tube reserve - 606													\$78	\$75	\$69	\$54	\$56	\$70	\$77	\$63	\$66	\$84	\$99	\$105	\$102
PoC DSO, 605	67d	66d	80d	80d	82d	80d	80d	88d	89d	88d	71d	71d	78d	70d											
PoC DSO, 606 or Est Equivalent	63d	62d	76d	76d	78d	75d	76d	84d	85d	84d	66d	65d	69d	60d	76d	68d	71d	68d	68d	71d	75d	73d	85d	95d	97d
PoC DRDO ex-missile reserve, 605	35d	34d	36d	34d	34d	33d	35d	41d	43d	51d	23d	25d	27d	26d											
PoC DRDO ex-missile reserve, 606 or Est Equiv	28d	27d	29d	27d	27d	25d	28d	33d	35d	44d	15d	16d	16d	14d	15d	10d	10d	13d	13d	11d	11d	14d	17d	19d	18d
Net PoC DSO, ex-missile reserve, 605	32d	32d	44d	46d	48d	47d	45d	47d	46d	37d	48d	46d	50d	44d											
Net PoC DSO, ex-missile reserve, 606											51d	49d	53d	46d	61d	58d	61d	55d	55d	59d	63d	59d	68d	76d	79d
NET POC DSO, 606 OR EST EQUIV	35d	35d	47d	49d	51d	50d	48d	50d	49d	40d	51d	49d	53d	46d	61d	58d	61d	55d	55d	59d	63d	59d	68d	76d	79d
<i>YOY, Actual 606 Only</i>											19%	18%	16%	20%	-10%	2%	3%	7%	24%	29%	29%	29%	29%	29%	29%

With the unbilled DSO explosion as background, we'll later look at the streak of positive "surprise" project revisions BWXT has enjoyed for nearly seven years in a row – unlike any of its peers and in defiance of its other forecasting surprises.

How many times can you move the goalposts on capex levels before your CFO quits?

That's a problem for Future Homer. Man, I don't envy that guy.

– Homer Simpson prior to drinking a mixture of mayonnaise and vodka



BWXT has been forecasting a quick return "next year" to lower capex levels for years, frequently moving back the goalposts and subtly erasing their prior forecasts about when these elevated expenditures would cease. These are all the datapoints we found from the company indicating its capex expectations at various times in its conference call transcripts or its investor day presentations. We highlighted in yellow each cell that represents a clear change in expectation from before:

	Q118	Q218	Q318	Q418	Q119	Q219	Q319	Q419	Q120	Q220	Q320	Q420	Q121	Q221	Q321	Q421
Peak year to be	2018			2019	2019			2020	2020	2020		2020			2021	2021
Peak spend to be	\$150m*	\$150m		\$150m	\$225m					\$270m					\$250m	
Return to (or near) maintenance to be	2020**				2021		2021	2022	2022	2022	2022	2022	2023	2023	2023	2023
Claimed maintenance capex % of sales NOG or Total Co?				~3%	3.0-3.5%	3.0-3.5%	3.0-3.5%	3.0-3.5%	3.0-3.5%						3.5-4.0%	
				NOG	NOG	Total co	Total co	Total co	Total co						Total co	

*given in Q118 as \$250m, later reduced by \$100m due to Nordion acquisition
 **exact language indicates a 2018 peak and then decline; in similar statements, capex is expected to normalize within 2 years
 (in Q218, BWXT announced it would buy Nordion and that this would replace some of its capex needs)

Here's the narrative record that goes into the visualization above, based on when the statement or presentation was made. Language quotes are from earnings calls whose date fell into the stated quarter:

- Q118 peak year: “But the -- as far as -- **this will be the high of our capital**, and I think it'll start going down.”
- Q118 peak spend: “We expect to increase capital expenditures in 2018 to approximately \$250 million for the year.” [Note that this was later reduced by \$100 million due to the Nordion acquisition, so when the company later says capex for 2018 is expected to be \$150 million, this is not a change of guidance. Therefore we show Q118’s “peak spend” guidance as \$150m, so as not to unfairly suggest the company changed guidance more often than it actually did.]
- Q418 peak year change: “So as far as capital, right now, we're in a capital year of roughly [150], and we feel that, that will probably be sustained in '19. **And then after that, we'll be -- start coming down for capital.**”
- Q418 claimed maintenance capex: IR presentation slide from Nov 2018
- Q418 NOG or Total Co: Same slide
- Q119 peak spend: “**We are guiding to about \$225 million in capital expenditures for 2019**, including the previously referenced \$30 million coming from capital received late in 2018. The remaining \$195 million is split with approximately \$120 million for Navy, \$50 million for isotopes and the remaining balance for other segments in corporate.”
- Q119 return to maintenance: “Given our current outlook, we believe 2019 will be a peak for capital expenditures. **In 2020, we see capital expenditures coming down below \$150 million and then returning to maintenance capital levels in 2021** at about 3.5% of revenue.”
- Q119 claimed maintenance capex: IR presentation slide from Feb 24, 2019
- Q219 NOG or Total Co: “The 3% to 3.5% is overall for the company is what we're seeing is our normal CapEx, once we get through this period of time of growth CapEx.”
- Q419 peak year and return to maintenance: “**We will still expect capital expenditures to remain elevated in the first half of 2021** and return to maintenance levels toward the back half of that year.”
- Q220 peak spend: “For 2020, we still expect capital expenditures to be at a peak year at \$270 million as we focus on investing in future organic growth. **Following 2020, capital expenditures are anticipated to start a downward trajectory**, with 2021 expected to be somewhat lower than the \$270 million we anticipate for this year and will return to near maintenance levels in 2022.” Note that they also reiterate 2022 being a “near-maintenance” year.
- Q121 return to maintenance: “**As we shift to maintenance capital expectations exiting 2022**, we expect robust free cash flow to return...” [If maintenance levels are reached only at the end of 2022, 2022 cannot reasonably be expected to be a near-maintenance year.]

- Q321 peak year and claimed maintenance level: “And Peter, to take the capital question, you've asked about capital for the remainder of the year. We said about \$250 million for the year. We said next year, which is '22, would be less than that. **Then in '23, we would be at our maintenance capital, which is 3.5% to 4% of revenue.** So the rest of this year is still going to be strong. We had \$137 million in the first 6 months, so you're going to pretty much duplicate that. And then you've got -- the timing between the 2 is going to be roughly just as strong. And then you could always have some timing issues between this year and next year. But I think over the next 4 quarters, you're still going to have a strong amount of capital to get done what we need to get done.” [We include the extra part about “strong” capital so readers can have a laugh about how BWXT refers to having high expenditures as “strong.” This isn’t the only example where they do that, by the way.]

You get the idea.

We think this pattern indicates that BWXT isn’t necessarily constantly running into new “one-time” capex needs. Rather, it seems like BWXT is just continually kicking the can down the road on acknowledging that maintenance capex in the business is much higher than it wants to admit. This of course goes hand in hand with the inching up of the maintenance capex bogey as a percentage of sales.

How much extra capex are we talking here

Let’s think for a minute about how much “extra” or “surprise” capex has been spent by BWXT since it started rising visibly. In 2018, management was saying that capex was going to be about \$150m in 2018, normalized down to about \$65m (3% of sales) in 2020, and somewhere in between those two numbers – let’s say \$110m – in the year in between, 2019. This isn’t exact, but it’s what might have been reasonably expected.

Maintenance level of about \$65m thereafter would mean that from 2018-2023, total capex might have been expected to be:

- 2018 (150m) + 2019 (110m) + 2020 (65m) + 2021 (65m) + 2022 (65m) + 2023 (65m) = **\$520m**

But realized or now-expected capex from 2018 to 2023, including guidance and Street consensus, is looking now to be:

- 2018a (109m) + 2019a (182m) + 2020a (255m) + 2021e (283m) + 2022e (203m) + 2023e (96m) = **\$1,128m**

That’s, give or take, about \$600m of unexpected capex over the 2018-2023 period, if the goalposts stop moving right now. How could BWXT management possibly underestimate its capex by this much?

Let’s look at the segment breakdown of capex spent by BWXT, available in the 10-Ks only:

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021e
Capex - NOG	\$32	\$45	\$32	\$35	\$36	\$44	\$86	\$93	\$133	\$136	\$151
Capex - NPG				\$14	\$7	\$3	\$4	\$5	\$38	\$107	\$118
Capex - NSG				\$0	\$0	\$1	\$2	\$1	\$1	\$1	\$1
Capex - Corporate					\$15	\$6	\$5	\$8	\$7	\$11	\$12
Capex - Total					\$57	\$53	\$96	\$107	\$180	\$255	\$283

(We assume that 2021’s segment breakdown will be proportional to 2020’s and use Bloomberg consensus capex for the 2021 total.)

Capex growth has been dispersed across both major segments, NOG (Navy) and NPG. But the spending in both segments seems far overdone relative to their various contextual factors.

Isotopes capex

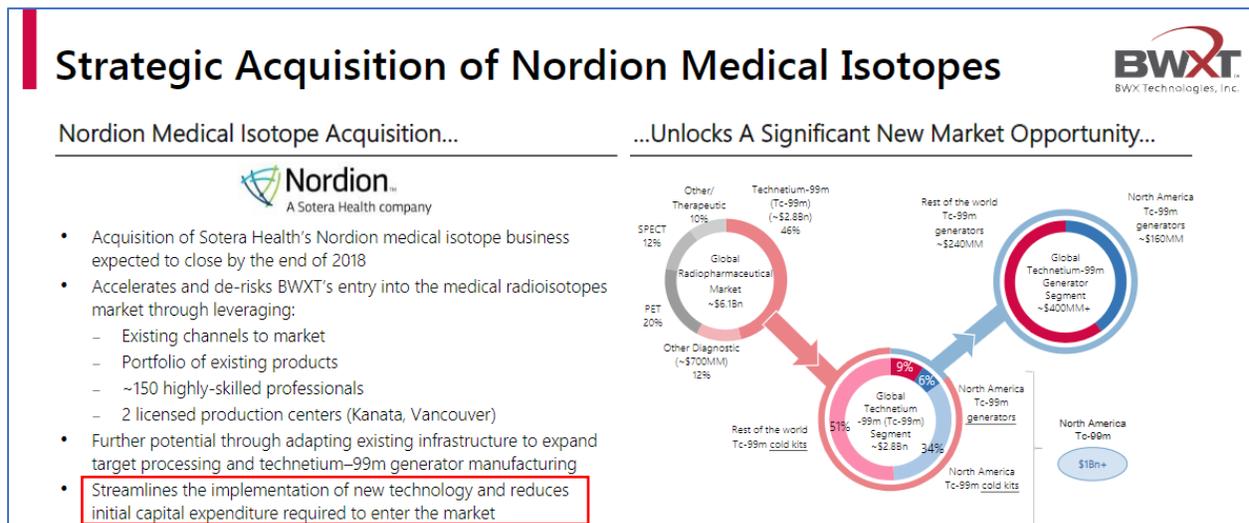
The story with the NPG segment is that the capex there has mainly been spent on the medical isotopes launch. For instance, on the Q420 earnings call: “Although Navy CapEx is still elevated above maintenance levels, most of the heightened capital investment [in BWXT overall] is expected to be related to medical isotopes this year [2021].”

And in the Q320 earnings presentation the company had said that they had “[i]nvested \$76M in NPG capital YTD, primarily for medical isotopes[.]”

Also, the acquisition of Nordion was said by the company to replace \$100m of capex:

“In conjunction with the closing of the Nordion medical isotope acquisition, BWXT expects to reduce capital expenditures by approximately \$100 million, before acquisition costs.” (April 17, 2018 press release from BWXT)

Likewise in the June 2018 investor presentation:



Here’s what we don’t get. If the excess capex in the NPG segment – let’s say everything over \$5m – is tracking to be about \$248m through 2021, and we know that 2022 is going to be another big capex year, then we’re probably looking at nearly \$300m in total NPG “excess” capex, not including what was spent buying Nordion. **So it looks to us like around \$300m of “excess capex” – excluding buying Nordion (and excluding R&D also) – will have been spent to establish the medical isotopes business by year-end 2022.**

The problem is that BWXT said previously that building out the medical isotopes business would only cost around \$150m of capital, after already having bought Nordion:

“The 3% to 3.5% is overall for the company is what we're seeing is our normal CapEx, once we get through this period of time of growth CapEx. This year [2019], we say \$225 million is the amount of capital. Inside of that capital is about \$50 million for the medical radioisotopes business. We feel that there's about \$100 million more to throw on top of that. We look at this year and next year to be the 2 high capital years. And then when we get into '21, by the end of the year, you're going to be at that 3% in the second half of the year, 3% to 3.5%. So you got this year, next year and then you're going to start coming down. But as far as medical radioisotopes, we feel \$50 million this year and about \$100 million next year.” - Q219 earnings call, well after Nordion had been bought

Why did it end up costing BWXT about twice this much in capex to establish this business, after it had already bought Nordion? (And why did it end up supposedly costing \$400m or so in total in capital including Nordion?)

At best, BWXT just had no idea how much the capex for this business would cost and/or they're horrendously aggressive (underestimating) when throwing out their capex plans to the public. We wonder, however, whether all this capex holds something else – **such as the possibility that the NPG segment was underinvesting in the past and this is the real maintenance capex...or the possibility that expenses are showing up as capex, inflating operating income.**

Navy-related capex

Switching gears to the NOG segment, a completely different context is appropriate to ask the same question: What did BWXT spend all this “growth” capex on?

As we said above, it looks like BWXT has had to spend around \$600m more in capex during this five-year period than it had expected to. It seems like the medical isotope spending might account for \$150m of that extra \$600m, if indeed the isotope capex was supposed to be around \$150m but ended up being around \$300m (all excluding the purchase of Nordion). If that's roughly accurate, then the Navy capex has surprised to the upside on the order of \$450m or so.

It's odd that BWXT would have such low visibility on its Navy-related capex, given that it has such high visibility on its Navy-related sales. So, did something happen to the Navy's long-term procurement plans since 2017 to cause the capex budget to surprise upward in such a massive way? It doesn't seem that way. The long-term procurement plan for the Navy, as it relates to programs that touch BWXT, has not materially increased and may even have slowed, given BWXT's exit from missile tubes since that time.

Look at BWXT's own disclosures from investor presentations in 2017 and then from 2021. We add a little star at the expected delivery date of each carrier completion expected by calendar 2032. **This is because the carrier construction projects are the highest-value ones by far for BWXT.**^{iv} Note that the government fiscal year is approximately 2 years ahead of BWXT's fiscal year.

June 2017:

When we look at the long-term carrier procurement expectations for the Navy we don't see any exciting changes having taken place between mid-2017 and late-2021 that would necessitate upgrade after upgrade in capex budgeting. The carrier construction plan in 2017 was essentially for a delivery every ~5 years on average, similar to what it is today. Arguably the plan now is less appealing to BWXT, with a large set of "gap years" in construction ahead. (Some of this may have to do with a delayed carrier delivery. Does that delay hurt BWXT? Maybe).^v

BWXT has removed the carrier refuelings from its slide about long-term procurement plans – and replaced them with an acknowledgement that carrier refueling (along with carrier construction) won't be a big business for years to come, either:



And what about the submarines? Well, in 2017 BWXT was looking at a max of 3 sub deliveries a year from 2022-on. Today it's looking at basically the same thing. And while it's possible subtler changes may have driven a modest increase in capex, it's highly unlikely that the Navy surprised BWXT again and again with major changes costing it hundreds of millions in surprise capex. Remember all that visibility on long-term procurement?

The big thing that has clearly changed for BWXT's outlook since this capex boondoggle began is the fact that it got out of the missile tube business, which was a decision made years ago in the face of construction failures on this product. Missile tubes were expected to be a nice business for years to come, but they were supposed to bring along their own capex needs as well. In 2019, BWXT said that it would be reallocating missile tube capex into other Navy business. Think about that for a second:

“At this point, we have not received any incremental orders for missile tube continuous production. As we have mentioned on prior calls, in the absence of any additional orders we plan to reallocate most of that CAPEX to support future growth in the core of Navy business,” Geveden said.^{vi}

They essentially got a windfall of capex to their remaining Navy business by closing out of the missile tube business – if anything, total capex should have been revised down, not up. And yet...

So if the outlook for NOG is similar or even slower for the medium term ahead, what would all that urgent, massive, and “unexpected” capex in the segment have been for? **What we really mean is, How much of BWXT’s capex has been what honest observers would call maintenance capex, and was any of it called capex when it should have been called opex?**

Also, if you told us that the medical isotope business, in which BWXT is relatively new and learning the ropes, was going to surprise over and over to the upside on capex needs...we could possibly stomach that, although it would not speak well to their ability to navigate this business. But we don’t see how this could be the case in the Navy business – you know, the one with legendary visibility and decades of experience?

We think the explanation is something more along the lines of, **“The maintenance capex is far higher than anyone realizes,” or – perhaps equally bad – “there have been unexpected expenses along the way and BWXT has been capitalizing them wherever possible.”**

BWXT’s winning streak of positive revisions is absurd on its face and absurd in the full context

For 27 quarters at least, BWXT has recorded net positive estimate revisions to its long-term projects in aggregate. This is typically reported as follows in the text of SEC filings^{viii}:

Accounting for Contracts

On certain of our performance obligations, we recognize revenue over time. In accordance with FASB Topic Revenue from Contracts with Customers, we are required to estimate the total amount of costs on these performance obligations. As of September 30, 2021, we have provided for the estimated costs to complete all of our ongoing contracts. However, it is possible that current estimates could change due to unforeseen events, which could result in adjustments to overall contract revenues and costs. A principal risk on fixed-price contracts is that revenue from the customer is insufficient to cover increases in our costs. It is possible that current estimates could materially change for various reasons, including, but not limited to, fluctuations in forecasted labor productivity or steel and other raw material prices. In some instances, we guarantee completion dates related to our projects or provide performance guarantees. Increases in costs on our fixed-price contracts could have a material adverse impact on our consolidated results of operations, financial condition and cash flows. Alternatively, reductions in overall contract costs at completion could materially improve our consolidated results of operations, financial condition and cash flows. During the three months ended September 30, 2021 and 2020, we recognized net changes in estimates related to contracts that recognize revenue over time, which increased operating income by approximately \$18.1 million and \$7.8 million, respectively. During the nine months ended September 30, 2021 and 2020, we recognized net changes in estimates related to contracts that recognize revenue over time, which increased operating income by approximately \$27.8 million and \$38.8 million, respectively.

What the company is reporting in this section is the process by which it continually re-estimates the future profitability of its long-term contracts. This is an esoteric and relatively opaque, but common, practice for companies that use contract accounting. The difference between the way BWXT does it and the way virtually everyone else does it is that when others do it, it isn’t always conveniently helpful to earnings.

Conceptually, the basis for this practice is the fact that as a company moves along in a project that is expected to take years to complete, the project may evolve differently than expected (faster, slower, more or less costly, overhead increase from missed days, etc.). Because long-term contract accounting uses the percentage of completion method, a delay in a project or a sudden expansion of direct costs can change the determination of the total, over-the-life profitability of the project. The accounting rule is that once a company decides that future, final contract profitability has changed, it needs to account for this change today – hence the change in estimates.

In the positive case, these revisions often reflect movement down the “experience curve,” which refers to a concept introduced by the Boston Consulting Group in 1966.^{viii} This concept states that as a manufacturer gets better at manufacturing a given product by gaining experience, its costs to make that product move down over time. Relevant for our purposes is the fact that the decline in costs is supposed to decelerate on any given manufacturing process (you don’t keep pushing costs down rapidly the entire time; you gain smaller and smaller incremental benefits, and eventually, you’ve optimized your process. See the graph in the appendix for Bruce Henderson’s original experience curve used to demonstrate this). As it relates to BWXT in a purely conceptual

sense, there should not be tons of experience left to gain on manufacturing key products it has been making for decades.

In the negative case, revisions often mean running into unexpected challenges along the way – things like labor shortages, raw material price surges, sick employees, etc. BWXT outlines this as a risk in the snapshot above, in fact.

Obviously, both good and bad things can happen in the same accounting period. Hence, companies make both their favorable and unfavorable adjustments in a given accounting period, and the combination of the two creates the net result. Some companies in BWXT's peer group provide both favorable and unfavorable changes as well as a net result, and some – like BWXT – provide only the net result.

An example of a company that provides both favorable and unfavorable (gross) changes in estimates on long-term projects is Spirit Aerosystems (SPR), from their 10-Q:

Changes in estimates are summarized below:

Changes in Estimates	For the Three Months Ended	
	September 30, 2021	October 1, 2020
(Unfavorable) Favorable Cumulative Catch-up Adjustment by Segment		
Fuselage	\$ (1.6)	\$ 8.8
Propulsion	1.6	(4.6)
Wing	(2.9)	0.4
Other	0.1	—
Total (Unfavorable) Favorable Cumulative Catch-up Adjustment	\$ (2.8)	\$ 4.6
Changes in Estimates on Loss Programs (Forward Loss) by Segment		
Fuselage	\$ (49.9)	\$ (92.0)
Propulsion	(3.9)	(14.9)
Wing	(14.6)	(21.5)
Total Changes in Estimates (Forward Loss) on Loss Programs	\$ (70.4)	\$ (128.4)
Total Changes in Estimates	\$ (73.2)	\$ (123.8)

While we have been following BWXT for years and have always been puzzled by its uncanny ability to avoid net-negative revisions, we became particularly intrigued once COVID struck. This is because COVID is exactly the type of macro event that should cause negative project revisions. Sick workers being out means higher overhead costs per project, lower productivity, supply chain challenges, etc. This isn't a secret to anybody and no serious person would deny that COVID affected manufacturing productivity all over the world.

Yet, BWXT booked \$43m worth of operating income from positive revisions in 2020, with positive revisions every single quarter of that year (like every other year). This is \$43m of net upside surprises to its profitability.

This “COVID imperviousness” got especially bizarre in Q321, when BWXT claimed that the delta variant of COVID was hammering its productivity and used this as an excuse for weaker than expected quarterly results...yet we saw in the SEC filing that the company had actually taken one of its largest net-**positive** estimate revisions ever.

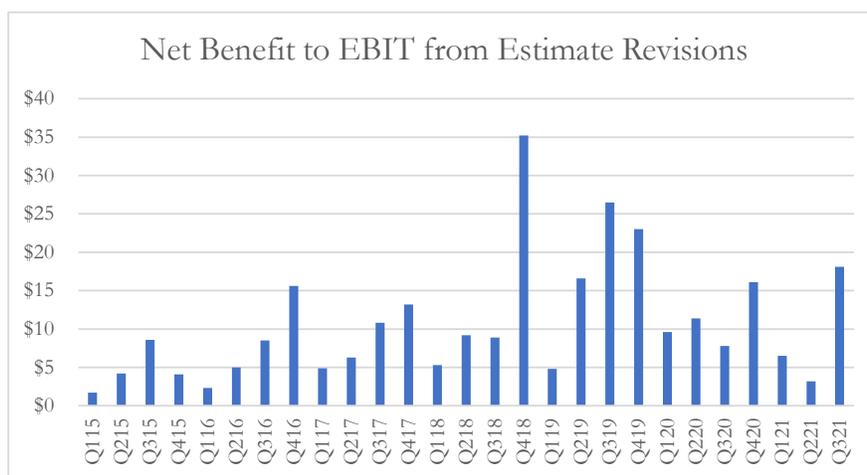
BWXT essentially claimed on its Q321 earnings call that COVID was running like wildfire through its factories and, most importantly, **impacting volumes and productivity**:

“However, pandemic headwinds have remained persistent and were particularly acute during the first and third quarters this year, aligning with the pre-vaccine and Delta variant surges in cases. While the business continues to perform, **we've been unable to maximize shop volume hours and productivity due to lower headcount from COVID-related absences...**

“I would say that most of the headwind has really been internal. We had this large peak in Q4[20] and Q1[21]. And on the worst days, we had several hundred people out either sick or in quarantine or out for deep cleaning. So we saw that peak then. **And then in the third quarter, we saw this Delta variant peak out at nearly 200 [absent employees] a day** in -- across our North American plants. So we've seen that kind of impact...

“In the supply chain, not so much in the way of materials and forgings and things like that show up in long-lead materials. But we have seen an impact from these large capital campaigns, these large capital equipment related to the NOG capital campaign, where we've had trouble, for example, getting technicians into the plant to help us install equipment and things like that. And so what that's done has **impacted volume through the shops and impacted some planned production capacity that we expected to be there** as we ramp throughout the year this year.”

BWXT reduced its rest-of-year EPS guidance as it announced these challenges, **but curiously, Q321 saw it book its largest positive accounting revision in two years.** Here's how this Q321 revision looks in context:



Two things can be true at once. BWXT can blame COVID for its Q321 miss, but still help its Q321 earnings by adjusting estimates of lifetime (including future) project profits upward – even though COVID productivity problems should have driven estimates of lifetime project profits down. **This bizarrely positive net benefit was worth 20% of BWXT's EBIT in Q3.** You can see how this pattern could snowball into a problem relatively quickly.

And while BWXT seems not to have found it necessary to record net negative revisions from COVID manufacturing problems, at least one of its most relevant peers did. Huntington Ingalls (HII), another Navy manufacturing contractor engaged in the construction of warships, took a substantial net-negative revision in Q220 due specifically to reduced productivity from COVID:

“For the three months ended June 30, 2020, net cumulative catch-up adjustments decreased operating income and decreased diluted earnings per share by \$111 million and \$2.15, respectively...**cost estimates for discrete delay and disruption from COVID-19 Events drove \$61 million of unfavorable cumulative catch-up adjustments** across our contracts, including \$16 million relating to Block IV of the Virginia class (SSN 774) submarine program, which is included in the \$111 million and \$120 million unfavorable adjustments discussed above.”

But even leaving aside BWXT’s COVID-driven manufacturing problems specifically, let’s zoom out in order to ask ourselves what “normal” revision habits look like for companies like BWXT. To define “companies like BWXT,” we used BWXT’s own self-defined peer group. This image is from its proxy filing:

Proxy Data Custom Peer Group for 2020 Compensation. Set forth below are the peer companies we have selected as our primary benchmark for 2020 compensation purposes.

- AAR Corp
- HEICO Corp.
- Teledyne Technologies Incorporated
- Aerojet Rocketdyne Holdings, Inc.
- Hexcel Corporation
- TransDigm Group Incorporated
- Astronics Corporation
- Huntington Ingalls Industries, Inc.
- Triumph Group, Inc.
- Barnes Group Inc.
- Kaman Corporation
- Wesco Aircraft Holdings, Inc.⁽¹⁾
- Cubic Corporation
- Moog Inc.
- Woodward, Inc.
- Curtiss-Wright Corporation
- Spirit AeroSystems Holdings, Inc.

⁽¹⁾ Wesco Aircraft Holdings, Inc. was acquired by Platinum Equity on January 9, 2020 and will be removed from the peer group for future benchmarking.

We think that in any given quarter or even year, enough vagaries exist that it’s usually not fair to point to any company and say “you didn’t take a negative revision and therefore you’re playing accounting games.” It’s odd to us that COVID never prompted BWXT to take negative revisions, but in theory, some **really** good offsetting factors might have been at play in any single quarter. We could imagine it.

What’s beyond our ability to imagine is a justification for this:

	Q115	Q215	Q315	Q415	Q116	Q216	Q316	Q416	Q117	Q217	Q317	Q417	Q118	Q218	Q318	Q418	Q119	Q219	Q319	Q419	Q120	Q220	Q320	Q420	Q121	Q221	Q321	Longest Streak (Qtrs)	
AIR	NA	NA	NA	NA	Pos	NA	NA	NA	Pos	Pos	0	Pos	0	Pos	7														
AJRD	0	Pos	Pos	Pos	0	Neg	Pos	Pos	Pos	Pos	Pos	Pos	Neg	Pos	Pos	Pos	Pos	Pos	Neg	Neg	Pos	Pos	Pos	Pos	Neg	Pos	Pos	6	
CUB	0	0	Neg	Neg	Neg	Neg	Pos	Neg	Pos	Pos	Pos	NA	Neg	Pos	Pos	Neg	Pos	Neg	Neg	Neg	Neg	Neg	Pos	Pos	Pos	NA	NA	3	
HII	Pos	Neg	Pos	Pos	Pos	Pos	Neg	Pos	Pos	Pos	Pos	Pos	16																
KAMN	Pos	Pos	Pos	Pos	Neg	Neg	Neg	Pos	Neg	Pos	Neg	Neg	Neg	Neg	Neg	Neg	Pos	Neg	Neg	9									
MOG/A	NA	Pos	Neg	Pos	Pos	Pos	Neg	Pos	Pos	Pos	Pos	Pos	Pos	5															
SPR	Pos	Pos	Pos	Pos	Pos	Neg	Neg	Pos	Pos	Neg	Neg	Pos	Neg	Pos	Neg	Pos	Pos	Neg	5										
TDY	Pos	Pos	Pos	Neg	Neg	Pos	Neg	Neg	Neg	Neg	Neg	Pos	Neg	Pos	Pos	9													
TGI	Neg	Pos	Neg	Neg	Neg	Neg	0	Pos	Pos	Neg	Pos	Pos	Pos	Neg	Pos	Pos	Neg	Pos	Pos	3									
BWXT	Pos	27																											
Average																												7	

Peers Not Included: *Why not included?*
 ATRO: *Mainly point-in-time revenue (no meaningful EAC adjustments)*
 B: *Mainly point-in-time revenue (no meaningful EAC adjustments)*
 CV: *No significant changes in estimates*
 HEI: *No significant changes in estimates*
 HXL: *Mainly point-in-time revenue (no meaningful EAC adjustments)*
 TDG: *Mainly point-in-time revenue (no meaningful EAC adjustments)*
 WCC: *Mainly point-in-time revenue (no meaningful EAC adjustments)*
 WWD: *Not provided or not material*

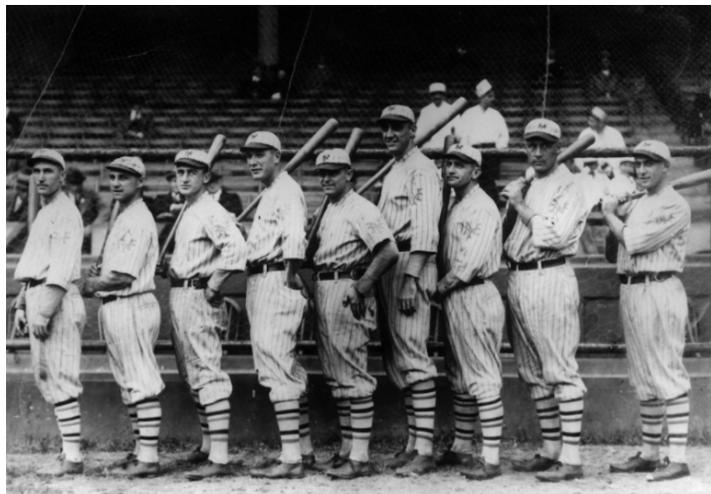
There is only one company in BWXT’s self-selected peer group that has had consistently positive revisions for more than four years in a row, and that company is BWXT.

BWXT’s streak is now going on **seven years** in a row. Compare that to the average **longest** streak for the peer group members of **seven quarters**.

The second-longest of any company streak is HII’s at 16 quarters, but a) even HII’s streak is an outlier from all the others, b) that streak ended years ago, and c) HII took at least one major negative revision because of COVID. **There is no way to look at this and not ask the question: Why is BWXT so special?**

We think this is the result of aggressive accounting, and we think that the explosion in unbilled DSOs is part of the story. Our view is that BWXT has taken an aggressive stance on project profit revisions, choosing to under-recognize negative changes and over-recognize positive ones, and this has resulted in overstated profits and earnings that don’t have the associated cash flows to go along with them. We think this is ultimately likely to end in an accounting restatement, along with a resetting of profit expectations to a more accurate level.

But we would expect that the company’s response to such claims would be something like, “*Actually*, the reason our project revision winning streak just topped the New York Giants’ 1916 baseball season is because we have such conservative accounting!” Let us explain.



The New York Giants had the longest winning streak in MLB history – 26 games – in 1916.^{ix}

With so many broken promises, a “conservative accounting” excuse is most laughable of all

Because we haven’t seen anyone raise this issue publicly such that management or the sell side might respond, we can only guess at to what a company representative or a bull might say to our claim that this “winning streak” of positive revisions is less than totally legitimate. However, we have one guess: That this streak is due to an inordinate level of **conservatism** in accounting practices by BWXT management. We laugh when we think about this argument potentially being made, but let’s try to understand the shape it would take.

If BWXT were intentionally sandbagging estimates in the name of conservatism, and doing so in such magnitude that they had built themselves a cookie jar lasting for seven (or more) years straight, then:

- **Why are they the only company in the peer group to do so?**
- **Why is this commitment to conservatism totally absent in their other forecasting (such as regards capex, working capital levels, and FDA approval timelines)?**
- **Why have their billings so miserably failed to keep pace with their revenue recognition?**

Taking each question in order:

- Why are they the only company in the peer group to do so?

We’ve previously shown that BWXT’s perma-upside in its project revisions is unique amongst its self-defined (proxy-chosen) peer group. All of these peers are public companies, too.

- Why is this commitment to conservatism totally absent in their other forecasting (such as regards capex, working capital levels, and FDA approval timelines)?

The answer to this question is our favorite because it’s virtually impossible to dispute: **Just look at BWXT’s forecasting record.** Let’s take capex, working capital, and FDA approval forecasts in turn.

Capex: Here’s the capex forecasts graphic, shown again for your convenience:

	Q118	Q218	Q318	Q418	Q119	Q219	Q319	Q419	Q120	Q220	Q320	Q420	Q121	Q221	Q321	Q421
Peak year to be	2018			2019	2019			2020	2020	2020		2020			2021	2021
Peak spend to be	\$150m*	\$150m		\$150m	\$225m					\$270m					\$250m	
Return to (or near) maintenance to be	2020**				2021		2021	2022	2022	2022	2022	2022	2023	2023	2023	2023
Claimed maintenance capex % of sales NOG or Total Co?				~3%	3.0-3.5%	3.0-3.5%	3.0-3.5%	3.0-3.5%	3.0-3.5%						3.5-4.0%	
				NOG	NOG	Total co	Total co		Total co						Total co	

*given in Q118 as \$250m, later reduced by \$100m due to Nordion acquisition
(in Q218, BWXT announced it would buy Nordion and that this would replace some of its capex needs)

**exact language indicates a 2018 peak and then decline; in similar statements, capex is expected to normalize within 2 years

There’s no question that BWXT has been absurdly aggressive on its capex forecasting. They not only didn’t build in room for error, they made specific, quantified promises about keeping a lid on capex and broke those promises again and again and again.

Working capital (largely driven by contract billings): BWXT has been talking on earnings calls for years about how their working capital would return to normal in the “near-term.” Over these years, it has blown out to higher and higher records of bloat and consumed hundreds of millions of dollars of cash flows. And more recently, BWXT has changed course, lowering expectations for improvement to a “modest” level.

Let’s go to the tape:

Q319 they say it’ll recover (provide cash) near term:

Q: “...Do you think you guys have a shot at getting to one-time conversion on free cash net income?”

A: “I mean obviously, we’re starting an increased amount of revenue, both at NOG and NPG. So along with that, you’re going to have additional working capital that’s going to be built into the business, especially early part of these contracts. So I mean I think the working capital continue to be healthy **but we know eventually, in near-term, it will come back.** But right now, it’ll probably be strengthened.” (note that terms like “healthy” and “strengthened” appear to refer to working capital consuming cash and/or slow collections, similar to how out-of-control capex is often described as “strong”)

Q220 they continue to talk down any extended working capital bloat:

Q: “Can you talk a little bit about working capital...?”

A: “So anytime we build up in the business, you’re going to have additional working capital to support that build of your manufacturing. You’ve got to remember that when we talk about our largest customer, the U.S. government, we do have terms by which we bill twice a month. **And when we bill, we get paid very quickly. So there is an initial pop of working capital,** but we tend to manage that.”

Q121 they start to walk back the idea of recovery:

Q: “...[O]n the medium-term financial targets. You mentioned kind of the modest improvements in working capital as a percentage of sales...Maybe you could just level set us on how you’re thinking of that?”

A: “I mean we haven't defined what that modest is. There's going to be some improvement over time, but we do have fluctuations when you look quarter-to-quarter with our working capital as we build up our contracts in progress and things. **So we just think as we look over time, there will be just some small, modest improvements** in that in order to provide the additional space for us.

But over this 2019-Q321 period, working capital has gone almost entirely in the wrong direction. It's drained almost \$200m of cash, or more than 100% of the free cash flow of the entire period. The promised improvement not only didn't come; things got much worse:

	Nine Months Ended September 30,	
	2021	2020
(Unaudited) (In thousands)		
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net Income	\$ 189,382	\$ 213,211
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	50,476	45,458
Income of investees, net of dividends	(12,375)	(4,183)
Recognition of losses for pension and postretirement plans	2,189	2,382
Stock-based compensation expense	14,861	12,139
Premium for early redemption of senior notes	10,752	—
Recognition of debt issuance costs from former debt instruments	4,212	665
Other, net	1,039	325
Changes in assets and liabilities, net of effects from acquisitions:		
Accounts receivable	99,604	(43,081)
Accounts payable	(20,787)	9,614
Retainages	(14,780)	(25,495)
Contracts in progress and advance billings on contracts	(71,020)	(65,077)
Income taxes	15,723	5,090
Accrued and other current liabilities	1,922	23,350
Pension liabilities, accrued postretirement benefit obligations and employee benefits	(53,430)	(29,741)
Other, net	7,810	3,437
NET CASH PROVIDED BY OPERATING ACTIVITIES	225,578	148,094

	Year Ended December 31,		
	2020	2019	2018
(In thousands)			
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net Income	\$ 279,196	\$ 244,677	\$ 227,305
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	60,674	61,722	60,097
Income of investees, net of dividends	(2,147)	(7,969)	(8,106)
Provision for deferred taxes	7,890	3,794	17,446
Recognition of losses for pension and postretirement plans	9,548	6,222	34,554
Stock-based compensation expense	16,844	12,726	11,883
Other, net	(792)	963	(2,238)
Changes in assets and liabilities, net of effects from acquisitions:			
Accounts receivable	(98,302)	15,605	37,282
Accounts payable	(1,241)	44,592	1,888
Retainages	(8,578)	11,477	24,911
Contracts in progress and advance billings on contracts	(53,242)	(78,645)	(34,012)
Income taxes	1,157	(3,833)	(23,257)
Accrued and other current liabilities	6,843	(14,135)	11,596
Pension liabilities, accrued postretirement benefit obligations and employee benefits	(29,311)	(8,822)	(187,425)
Other, net	7,903	(9,006)	(2,634)
NET CASH PROVIDED BY OPERATING ACTIVITIES	196,442	279,368	169,290

FDA approval timeline: Aggressive forecasting hasn't just been limited to financial items, either. BWXT has also been moving the goalposts on FDA approval for their moly-99 production – does anyone remember that they were originally supposed to have the first technetium-99 generator revenues in 2019?x They're now hoping for late 2022, and even that date has begun to look squishy. **Over the past three years, their publicly described timeline has been pushed back by...about three years, with multiple “resets.”** And they've not only been overly aggressive, repeatedly, about their forecasts, they've also talked about how confident they are in these (wrong) forecasts:

In Q118, they're saying it's safe to assume 2019 for approval (and that they have great insight into this timeline):

Peter J. Arment, Robert W. Baird & Co. Incorporated, Research Division - Senior Research Analyst [36]

Okay, all right. And then you mentioned the regulatory approval. Again, trying to predict the timing, but **is it safe to assume this is more of a second-half 2019** when you -- when we're thinking of approvals?

Rex D. Geveden, BWX Technologies, Inc. - President, CEO & Director [37]

Yes, we were saying late 2019 is where we were targeting the approvals. And by the way, we've had good success in the regulatory framework in Canada and in the U.S. We are very accustomed to dealing in highly regulated markets, as you would well understand. And so it's -- we have staff experts for that kind of thing and are familiar with how to get through the process.

In Q218 they stick to the late 2019 timeline, but suddenly they add that it's "aggressive":

We are supremely confident in our technology and channels to market, **and although aggressive**, we still anticipate bringing the technetium-99 product line to market around the end of 2019.

In Q318 they officially walk FDA approval back to late 2020/early 2021, but this time, they've ironed out the uncertainties, and by the way, they *always* said the old schedule was aggressive:

And lastly, on the regulatory front, we are pleased with our interactions with the FDA. We expect to irradiate moly-99 reference batches in the summer of 2020 and **anticipate FDA approval of our technetium-99 generator, supporting first revenues in the first quarter of 2021...**

Q: And then, just the last one for me, Rex, just on the medical isotopes, **I mean, just last quarter we were thinking late 2019...**I mean, what changed so materially between last quarter and this quarter to push out the schedule?

A: ...So, I think, there were - well, first off, we were - it was, **it was an aggressive schedule, and we were acknowledging that all along.** But, I think, there were a number of schedule uncertainties that existed throughout the - through this developmental period. **And we basically settled all of those schedule uncertainties over this last quarter...**

We made certain assumptions about it because we didn't have much access to that during the acquisition. **And now that we have the business and can work detailed schedules from the bottom up, we've got a much clearer view about what that is...**

So, I think, what we've done is **we've largely eliminated the uncertainties in the schedule and have some room, frankly, for some errors here.**

On the Q419 and Q120 calls, it turns out they didn't actually have the schedule quite so tight. Yet again we get pushed back to mid-2022 commercialization (nothing to do with COVID, by the way):

(Q419) We are also making progress on moly-99 commercialization efforts, while also addressing some schedule challenges...The multifaceted commercialization efforts continue to make solid but slower progress than anticipated...**Due to these delays, we are re-baselining program schedule** and expect to provide investors with an update as we work through the risks and approaches and detailed plans crystallize...

(Q120) We have now completed a comprehensive rebaseline of the program considering the foregoing factors and other risks that could manifest, and we now project to reach **commercial readiness in midyear 2022**.

In Q420, the company was still saying that it expected 2022 approval (resulting from a 2021 submission to the FDA):

Q: Okay. That's helpful. And then just sort of clarification back on the isotopes. Are you -- the plan for, I think, was previously that at some point, maybe in the second half of 2021, you'd be submitting for approval of FDA an application for moly-99, Tc-99. Is that still the plan? Or does that shift into '22?

A: Yes. No, we haven't -- we've been reluctant to publish internal milestones on that. **But we're still tracking to that thinking.** The thing that we can control is when we submit the package to the FDA, and our view on that is unchanged.

Then in Q221, FDA submission expectation is clarified to “around the end of the year”...:

The program remains on track to **submit FDA reference batches and required documentation around the end of the year** as we seek a priority review.

And then over two calls over a short period, the approval timeline is again pushed back to late 2022 or early 2023:

(Q321 call) Q: Rex, you mentioned, obviously, preparing for the FDA submission and talk a little bit about the technetium. Could you give us an update on where you are in terms of running the hot chemistry? And what else is necessary to be done before you do submit to the FDA, and if it's still on track for kind of December, January as you've been talking about?

A: **In terms of the FDA package I was a little -- sort of a little mushy in my statement around this,** the last time that we would submit it around the end of the year. We're sticking to that schedule. **We will not get the FDA package in '21,** but sometime in the first quarter of 2022, so more or less on track.

(Nov 2021 investor day) So we plan to submit to the FDA -- submit application to the FDA...And our plan is this will be around Q1 next year. Then approval after that is obviously under the purview with the FDA, but we will seek priority review. And if successful, we would **hopefully get approval either at the end of [2022] or a little bit afterwards.**

When you're constantly moving the track, of course it's easy to stay on it. Here's the visualization:

	Q118	Q218	Q318	Q418	Q119	Q219	Q319	Q419	Q120	Q220	Q320	Q420	Q121	Q221	Q321	Q421
FDA submission			mid-2020									2H21		end-2021	Q122	Q122
Approval/first sales	late 2019	late 2019	Q121				TBD mid-2022				mid-2022					end-2022+

So to sum all of this up: several years ago their capex plan was for a peak in 2018, their FDA approval timeline for moly/tec-99 was to be selling product in 2019, and their working capital problems were going to clean up in the “near term”. **Now their capex plan is for a peak in 2021, their FDA approval timeline is to be**

selling product in late 2022, and their working capital not only didn't clean up, it got a lot worse and doesn't sound like it's going to improve that much from here.

The point of this section isn't to make fun of BWXT for being overly aggressive and highly confident on forecasts of all different types that turn out to be wrong. The point is to say that it would be really, really bizarre for BWXT's pattern of hyper*aggressive* forecasting to contrast with a long pattern of hyper*conservative* forecasting specifically in the domain of project revisions. Occam's Razor would tell us that BWXT is just doing the same thing with these revisions: Every quarter, making increasingly optimistic assumptions about what's to come.

The difference from these other aggressive forecasts is that with project revisions, you get to take in EBITDA now whenever you make an aggressive assumption about the future. And when aggressive project forecasts turn out to be wrong, they get reversed later – like what happened with BW (and GVA, and SNC.CN, etc.).

- Why have their billings so miserably failed to keep pace with their revenue recognition?

We covered this topic previously in our section on unbilled DSOs, but need to mention it again in the context of this potential rebuttal about “conservatism” in BWXT forecasting.

Nuclear plant refurbishment is notoriously difficult to price accurately, and BWXT's business is ~90% fixed-price contracts

When reviewing the BWXT 10-Qs/Ks for information about where the growth in unbilled revenues has taken place, something jumped out at us. Here's a quarter-by-quarter review of every period in which BWXT's MD&A described unbilled revenue growth in specific segments:

	Q118	Q218	Q318	Q418	Q119	Q219	Q319	Q419	Q120	Q220	Q320	Q420	Q121	Q221	Q321
NOG?	Yes	No	(decrease)	(decrease)	No	Yes	Yes	Yes							
NPG?	Yes	Yes	Yes	Yes	Yes	Yes									
NSG?	No	No	No	No	No	No									
Notes												Laker acq added	NOG also gained adv billings	NOG also gained adv billings	NOG also gained adv billings

The quarterly disclosures looked like this example:

“During the nine months ended September 30, 2021, our **unbilled receivables increased \$90.8 million** primarily as a result of fixed-price incentive fee contracts within our **Nuclear Operations Group** segment and the timing of milestone billings on certain firm-fixed-price contracts within our **Nuclear Power Group** segment.”

We found that from Q118 through Q321, **every single quarter included mention of the Nuclear Power Group as a driving factor of unbilled receivables growth.**

While we found this to be the case in many quarters for the Nuclear Operations Group (Navy business) too, we also found that in some quarters the unbilled receivables decreased in the Navy business, and in others the increase in unbilled A/R happened alongside an increase in advanced billings.

So while we can certainly say that much of the A/R build happening at BWXT has occurred across the business, a disconcerting amount of it appears to have happened specifically at the Nuclear Power Group. Why is this disconcerting?

(Sidebar: A skeptic of our work might ask, “The Nuclear Power Group is only a fraction of the total BWXT business, so who cares if something is wrong there?” This would be a completely backwards and naïve interpretation. Non-core or non-majority segments doing long-term, costly projects in levered parent companies can ruin, and have ruined, their parents. We think it’s worse if the source of this huge unbilled expansion is in the smaller segment, rather than in the bigger one. We’ll get to that.)

For starters, the Nuclear Power Group is barely 20% of the revenues of BWXT. **If a segment doing ~20% of the revenues is driving a massive increase in unbilled A/R that shows up quite clearly at the total-company level, something seems horribly wrong in that segment.** Imagine what the unbilled DSO change would be over this time at the Nuclear Power Group level alone, even if (say) that group was responsible for only half of the growth in unbilled receivables?

Secondly, the Nuclear Power Group has had virtually no growth in its revenues recognized over time (as opposed to point-in-time) in the past few years. The segment has grown inorganically, but most of its inorganic growth has been from its Nordion Medical acquisition, which was virtually all point-in-time revenues. But it’s the over-time revenues that generate the PoC assets (the contract assets or unbilled A/R).

In the nine months ended 9/30/21, the Nuclear Power Group did \$255m in revenues recognized over time:

	Nine Months Ended September 30, 2021				Nine Months Ended September 30, 2020			
	Nuclear Operations Group	Nuclear Power Group	Nuclear Services Group	Total	Nuclear Operations Group	Nuclear Power Group	Nuclear Services Group	Total
	(In thousands)							
Over time	\$ 1,169,915	\$ 254,727	\$ 91,356	\$ 1,515,998	\$ 1,220,386	\$ 229,750	\$ 103,800	\$ 1,553,936
Point-in-time	113	37,895	—	38,008	143	34,254	—	34,397
Segment Revenues	\$ 1,170,028	\$ 292,622	\$ 91,356	1,554,006	\$ 1,220,529	\$ 264,004	\$ 103,800	1,588,333
Eliminations				(21,907)				(21,727)
Revenues				\$ 1,532,099				\$ 1,566,606

Whereas in the nine months ended 9/30/18, the Nuclear Power Group did...\$241m of revenues recognized over time. There hasn’t been any meaningful growth here in the last three years (and 9m20 was down from 9m18, obviously).

So if the Nuclear Power Group, which has had virtually no growth in revenues classified as “over-time” since 2018, has seen constant unbilled A/R growth since 2018 and minimal if any advanced billings growth...how could that happen? We think the notoriously difficult work that this segment does, and certain problems BWXT in particular has had in this work, are a key part of the problem.

BWXT has been supplying the commercial nuclear industry with large components for decades. Along the way, the company decided to make the move from simply manufacturing components to contracting with customers for their installation or refurbishment of these components. Simplistically, they went from manufacturing to E&C work. As anyone with experience in the E&C space knows, it can be hard to predict the financial outcomes of these large projects. But what many E&C experts may not realize is that in the business of overhauling nuclear power plants, “hard” is a wild understatement.

In our conversations with Canadian nuclear industry experts, we found that BWXT has a solid reputation as a “factory” company but has run into trouble as a “nuclear site” or “execution” company. One North American nuclear safety engineer with whom we spoke explained as follows (paraphrasing):

BWXT are good at what they do – designing product. But they tried to bridge themselves to be a one-stop shop, and it hasn’t worked as well. The American model of nuclear is to hire a single-source supplier to do all the work for a nuclear

plant refurb. BWXT tried that model at Bruce Power on one project and it failed miserably...I think they got a cold, stark realization that while they were very good at building generators, they were not so good at pushing into a valve program...where you're taking a factory element to a nuclear site. The guys who were running that execution left the company, and BWXT has since been partnering more with contracting companies rather than trying to do all this alone.

This expert said that he respected BWXT for eventually realizing what they were good at and what they weren't. However, as he described some of the challenges of this project, it opened our eyes to the sheer scope of possibilities for incorrect judgments on nuclear refurbishment project profitability.

My company was sent in to help BWXT with their valve installations at a Canadian project in 2015. We ended up in a few safety issues, and I ran into all the same faces who I had seen in a previous [late 2000s] project from BWXT. It was all the same guys who had messed this execution process up years ago and now they needed us to bail them out again. [Later, this expert told us that those "guys who had messed this execution process up" eventually disappeared from the company, hopefully to the relief of BWXT's future customers.]

The nuclear refurbishment business is notorious for delays of all kinds, and not because the companies in this business are just bad at what they do. On the contrary – refurbishing a nuclear plant is incredibly complex and involves many pitfalls, some of which cannot be measured until the project is well underway. As one example, radiation levels in some areas cannot be measured until certain plant machinery is opened up by the technicians during the refurbishment. If the radiation level ends up being too high, the entire project is slowed down dramatically, as exposures for each worker must be tightly limited. If BWXT underestimates the radiation levels while planning a project, then it likely to underestimate its labor cost overhead as well. This means overhead cost balloons **versus initial project estimates**. This is just one example of how things can go wrong.

We won't pretend to think BWXT deserves fault for running into problems on nuclear projects like this, for exactly the above reason. Our research indicates that every company in the space does. And we certainly don't advise any readers of our reports not to do business with BWXT. We would also like to highlight that BWXT received praise in our expert calls for its "scientific" leadership – its expertise in designing large components that go into these nuclear plants.

Our problem is with the numbers presented to investors, which imply to us that BWXT has run into problems somewhere – probably in the Nuclear Power Group and probably in big projects like this - but hasn't properly accounted for them in a financial regard.

Here's another example of BWXT's apparent involvement in a large nuclear project delay, which we had to piece together from news reports:

- In October 2016, the refurbishment of Darlington's Unit 2 formally begins after six years of planning. It will take years to complete: <https://world-nuclear-news.org/Articles/Green-light-for-next-Darlington-refurbishment>
- April 2017: **BWXT wins a feeder supply contract** for OPG's Darlington refurbishment (reported in an October 3, 2017 BWXT investor presentation, slide 40)
- May 2018: BWXT, on an earnings call, describes its sales of feeder tubes to OPG:
 - "...[W]e supply feeder tubes in the Canadian market to Ontario Power Generation. We're a significant player in the waste containers that are related to the refurbishment market. And so yes, I think you're seeing that organic growth trajectory [in NPG] that you see there is really by and large refurbishment driven."

- August 2019: OPG reports a delay in Unit 2’s reactor construction **due to delays in “fabrication and installation” of feeder tube components**: <https://www.opg.com/news/darlington-refurbishment-performance-update-q2-2019/>

We’ll say it again: This is really complex work and delays are part of the normal process. But if BWXT has had project challenges and failed to account for them in full, that would be something very different.

Now, let’s go back to the question we raised before: What if someone saw the Nuclear Power Group, which is only about 20% of BWXT revenues, as minor and unlikely to harm the overall business? We’d advise asking former Babcock & Wilcox (BW) shareholders that question. Recall that BW was spun off from BWXT in 2015.

In August 2017, BW’s stock price was cut by more than half in a single day because of charges incurred on its Renewable Energy projects in Europe. The news was reported as follows:

Babcock & Wilcox Punished by Market After Renewable Charge
By Michael Bellusci

(Bloomberg) -- Babcock & Wilcox Enterprises shares plunged 69% intraday to a record low on heavy volume following its 2Q results.

- BW’s 2Q loss/share of **\$2.56 missed adj. EPS est. 6c.. hurt by a \$115.2m charge from “unexpected cost and schedule issues”** in the Renewable segment
- CEO James Ferland said in the August 9 release BW has “revamped our go-forward business model for this segment and have also entered into new financing arrangements. These arrangements provide us the financial flexibility to focus on completing our U.K. Renewable projects while executing our three prong business strategy to optimize our Power business, pursue profitable growth under our new execution model in Renewable, and grow our Industrial segment”

BW US Equity
Graphic Dashboard

Price 2D
\$8.57

News Chart 5D
Volume

And here’s how the crash looked in context:



BW described the losses incurred as follows in its 10-Q:

“In the second quarter of 2017, we incurred \$151.0 million of net losses, primarily resulting from a total of \$115.2 million in losses in our Renewable segment **from changes in the estimated revenues and costs to complete**

six renewable energy contracts in Europe...The 2017 second quarter charges in our Renewable segment were primarily a result of scheduling delays and shortcomings in our subcontractors' estimated productivity.”

Would you like to know how big the **entire** Renewable segment was in the year that BW was spun off?

(In thousands)	Years ended December 31,		
	2017	2016	2015
Revenue:			
Power segment	\$ 821,062	\$ 981,978	\$ 1,734,097
Renewable segment	347,198	349,172	333,623
Industrial segment	397,791	235,613	183,693
Eliminations	(8,316)	(6,500)	—
	1,557,735	1,579,263	1,757,298
Gross profit (loss):			
Power segment	191,099	233,590	267,032
Renewable segment	(28,206)	(86,169)	(57,482)
Industrial segment	41,383	50,726	54,828
Intangible amortization expense included in cost of operations	(14,272)	(15,842)	(7,676)
Mark to market gain (loss) included in cost of operations	8,972	(21,208)	(44,307)
	99,876	179,117	308,187

BW's Renewable segment was 19% of total BW revenues before it blew up the entire company.

~\$25-30m of annual GAAP income from messing with depreciation is coming to an end

In the 2018 10-K filed in February 2019, BWXT made a subtle change that would surely go unnoticed by most observers: They changed the useful life estimate for certain PP&E assets.

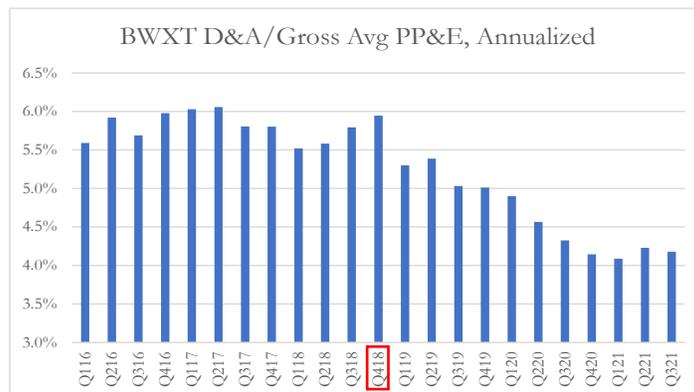
The Q417 10-K, like the 10-K's before it, read:

We depreciate our property, plant and equipment using the straight-line method over estimated economic useful lives of eight to 33 years for buildings and three to 14 years for machinery and equipment.

But the Q418 10-K read:

We depreciate our property, plant and equipment using the straight-line method over estimated economic useful lives of eight to 40 years for buildings and three to 14 years for machinery and equipment.

It would be reasonable for you to see this and think that simply taking the long end up of a useful lives range, and only for buildings at that, could not possibly impact depreciation enough to help earnings – right? But more than meets the eye seems to have been contained within that “small” change, because beginning almost immediately, BWXT’s depreciation as a percentage of its gross PP&E started collapsing:



Source: 10-Q/K filings and Jehoshaphat research ratio calculations using D&A/average of beginning and ending periodic gross PP&E. Red box indicates disclosure of change to depreciation accounting.

We can't help but suspect that whatever BWXT did in Q418, it did in conjunction with the sight of its capex plans starting to go out of control. Remember, Q418 was the first of many capex pushbacks that we found. Anything the company could do to get its depreciation lowered would help offset the hit to operating income that was sure to emerge once increased depreciation started flowing through.

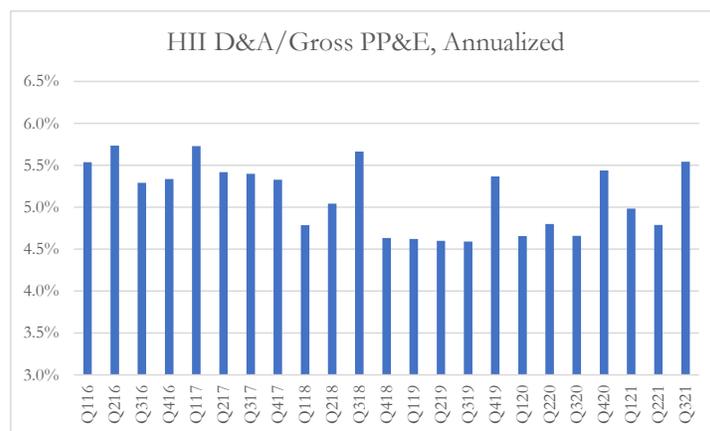
And we know that the company did care about the impact of depreciation on its operating income, too! They cared so much that they started coaching investors recently to focus on EBITDA rather than EBIT:

“Now I added adjusted EBITDA, as many of you know that have followed us, we haven't actually focused on this metric that much in the past. But internally and now externally, we really want to focus on this metric because we really want to be judged on what the core underlying growth of our business is. As many of you know, there are changes going on in taxes, pension. We talked about the CapEx and how we're going to bring in depreciation at different levels. We really want to be judged on what that adjusted EBITDA is.” – Nov 2021 Investor Day

Our best guess is that while BWXT may have nominally changed its disclosure about useful lives in the 10-K, it may have made more changes than just lengthening the long end of this useful lives assumption. It may have also moved assets to the long end of depreciation schedules within that range, for instance.

So, how much does this matter? A lot, it turns out. The ratio of D&A to average gross PP&E in Q321 was 4.2%. That ratio averaged 5.8% from 2016-2018, before the change in accounting policy was reported. The D&A expense in Q321 was \$17.5m, or \$70m annualized. If the D&A charge were $(5.8 / 4.2 - 1) = 38\%$ higher, the Q321 D&A amount would be \$24.2m, and that would be \$97m annualized. **The lower rate of D&A today is worth approximately \$27m in annualized EBIT to BWXT, and far more over this multi-year period. And it's purely accounting magic.**

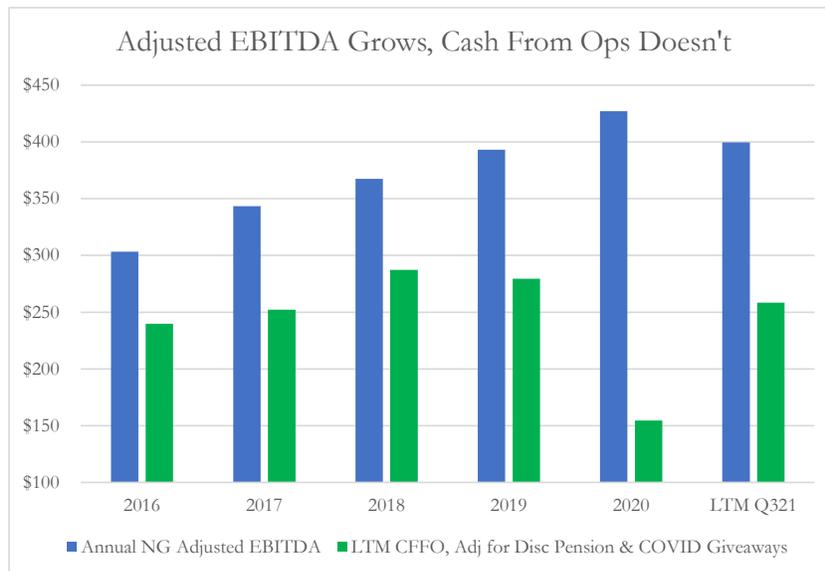
As a sanity check, let's look at peer HII's D&A/Gross PP&E ratio over this period:



Proper CFFO versus EBITDA is a continually declining ratio

This is a secondary point in light of the findings above. If we needed yet another sanity check on the abysmal quality of BWXT's earnings, this would be it.

We know it takes a little chutzpah on our part to call our calculation of Cash Flow from Operations “proper,” but we think that it’s the necessary term in this case. If we normalize CFFO for one-time items, we see a concerning pattern: A lumpy but ongoing breakdown between “proper” CFFO and BWXT’s definition of adjusted EBITDA:



We present this data in annual, as opposed to quarterly, form because this is all that BWXT has made available over this longer period^{xi}. BWXT hadn’t talked about adjusted EBITDA – they literally hadn’t used the words together that we could find in a word search – in years. In 2021, they started talking about it because they needed to reframe the story to rely on a nicer-looking metric. As we mentioned, the company decided to start focusing investors on adjusted EBITDA (apparently because they couldn’t keep their artificially low depreciation from bubbling up any longer). They retroactively provided this number on an annual basis going back to 2016 in their Nov 2021 Investor Day presentation.

So, how do we calculate “proper” CFFO? It’s not that complex, it’s just a bit of a hassle. We remove known or apparent large, discretionary pension contributions (a drain on cash) and known or apparent COVID cash subsidies (a boost for cash). We say “known or apparent” in both cases because we may be off slightly on specific quarterly timing when the disclosures aren’t crystal clear, but these are miniscule differences. Here are the quarterly inputs for our CFFO calculation:

	Q116	Q216	Q316	Q416	Q117	Q217	Q317	Q417	Q118	Q218	Q318	Q418	Q119	Q219	Q319	Q419	Q120	Q220	Q320	Q420	Q121	Q221	Q321
Reported CFFO	(\$13)	\$86	\$19	\$147	(\$55)	\$119	\$81	\$77	(\$19)	\$36	(\$26)	\$178	(\$18)	\$65	\$44	\$188	(\$6)	\$162	(\$8)	\$48	\$98	\$60	\$67
Discretionary Pension Contribution								(\$30)			(\$118)												
CARES Act Benefit (Payroll Tax Deferral) (Exact or Approx)																		\$7	\$7	\$7			
Canada Emergency Wage Subsidy (Exact or Approx)																			\$17	\$4	\$1	\$3	\$1
Proper CFFO	(\$13)	\$86	\$19	\$147	(\$55)	\$119	\$81	\$107	(\$19)	\$36	\$92	\$178	(\$18)	\$65	\$44	\$188	(\$6)	\$155	(\$31)	\$38	\$98	\$57	\$67
LTM Proper CFFO				\$240	\$198	\$231	\$292	\$252	\$288	\$205	\$217	\$287	\$288	\$317	\$269	\$279	\$291	\$381	\$305	\$155	\$259	\$160	\$258

The Q318 discretionary pension contribution is given on that quarter’s earnings call, while the 2017 discretionary contribution is mentioned only years later, first showing up in the Feb 25, 2020 investor presentation as an adjustment to operating cash flows on page 22.

The key takeaway for this EBITDA to CFFO comparison is that while BWXT brags about the former as follows:

“And we're going to provide you the drivers as to how we're going to grow that EBITDA. Remarkably, even that statistic over the past years has been pretty impressive and steady at a 10% clip.”

...the latter has been basically flat for all this time.

“I’ll Be Gone, You’ll Be Gone” – the same people and problems preceded BW’s implosion

We provided the history of BW’s common stock already, but we’ll show it here as well for convenience, a little further back this time so you get the full picture:



We’re not interested in trying to make the amateurish implication that just because BW’s stock has been a loser, so should BWXT’s. What interests us is the “rhyming” of this history, especially because of the BWXT managers who must have been involved in these problem projects before they got dumped into the spinoff along with BW.

The key similarities between pre-implosion BW and current BWXT are remarkable:

- The similar buildup of contract (project) assets and their drain on cash
- The long arc of positive project revisions at BW, right through spinoff (until reversal/implosion)
- The involvement of BWXT’s Chief Financial Officer (then Chief Accounting Officer) and Chairman when BW was part of BWXT

1. Contract (project) assets

Similar to BWXT today, BW had a concerning buildup of working capital that centered around its project accounting (or contracts in progress).

BW addressed project billing challenges in its business in its Renewable projects just before those projects blew up:

“For the quarter [Q116], cash flow from operations was a negative \$38 million, primarily as a result of changes in **advanced billing and contracts in progress... the timing of milestone achievements** during the first quarter **did not give us the opportunity to bill and collect** an equal amount of cash prior to the end of the quarter.” – Q116 BW earnings call

And also over a longer timeframe, just prior to spin:

“Moving to talk about cash flow. **Admittedly, cash flow in this business has been less than excellent over the past several years**, but there's a reason for that. In 2012, we were significantly impacted by an \$83 million pension contribution from this line of business. And in 2013 and 2014, negative cash flow was driven by the work off of large -- of a large net work-in-process position that was created in 2011 and 2012. Net work-in-process is the **difference between advanced billings on contracts and construction in progress**. Market conditions in place in the market at the time of project is contracted, influences a number of terms in the contract, including the cash flow characteristics and upfront payments and milestone billing terms...” – June 2015 BW analyst day

BW's cash flows from the “Contracts in progress and advance billings on contracts” over the four years preceding the implosion of the Renewable projects were a disaster. Despite no growth in revenues for this business from 2012-2015, the contract assets and liabilities were a drain on cash of more than \$150m:

BABCOCK & WILCOX ENTERPRISES, INC.
CONSOLIDATED AND COMBINED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2015	2014	2013
	(In thousands)		
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net income (loss)	\$ 19,337	\$ (26,162)	\$ 174,816
Non-cash items included in net income (loss):			
Depreciation and amortization	34,932	32,436	23,030
Income of investees, net of dividends	242	8,743	1,995
Losses on asset disposals and impairments	16,881	5,989	2,580
Write-off of accrued claims receivable	7,832	—	—
Provision for (benefit from) deferred taxes	(32,121)	(42,023)	56,107
Recognition of (gains) losses for pension and other postretirement plans	40,611	101,792	(91,358)
Stock-based compensation and thrift plan expense	7,773	(11)	(172)
Changes in assets and liabilities, net of effects from acquisitions:			
Accounts receivable	(33,977)	(13,797)	4,898
Accounts payable	17,863	(8,860)	(13,354)
Contracts in progress and advance billings on contracts	62,971	(99,192)	(97,360)
Inventories	6,060	4,309	10,769
Income taxes	9,275	10,123	(23,309)
Accrued and other current liabilities	11,464	9,660	(22,520)
Pension liability, accrued postretirement benefit obligation and employee benefits	(2,336)	(17,259)	(20,053)
Other, net	3,592	10,028	10,331
NET CASH FROM OPERATING ACTIVITIES	170,399	(24,224)	16,400

THE POWER GENERATION OPERATIONS OF THE BABCOCK & WILCOX COMPANY
COMBINED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2014	2013	2012
	(In thousands)		
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net Income (Loss)	\$ (26,164)	\$ 174,815	\$ 140,894
Non-cash items included in net income:			
Depreciation and amortization	36,454	29,726	23,857
Income of equity method investees, net of dividends	8,726	1,995	(8,401)
Losses (gains) on asset disposals and impairments	8,304	1,153	3,276
Provision for (benefit from) deferred taxes	(39,384)	43,061	45,774
Recognition of (gains) losses for pension and postretirement plans	112,033	(114,096)	14,378
Excess tax benefits from stock-based compensation	(96)	(172)	(606)
Changes in assets and liabilities, net of effects from acquisitions:			
Accounts receivable	(19,520)	33,767	(24,803)
Accounts payable	(7,758)	(16,381)	41,660
Contracts in progress and advance billings on contracts	(110,419)	(106,395)	(21,948)
Inventories	2,959	11,264	(10,697)
Income taxes	4,225	1,213	(7,911)
Accrued and other current liabilities	19,933	(30,253)	(18,850)
Pension liability, accrued postretirement benefit obligation and employee benefits	(27,003)	(43,680)	(95,610)
Other, net	9,038	6,662	(22,818)
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES	(28,672)	(7,321)	58,195

Source: BW 10-K and S-1

2. BW's own history of positive project revisions

You're not going to be surprised by this part.

BW was reporting strongly positive surprises in its project profitability estimates for at least several years straight, right through its spinoff from BWXT. We have information from BW's first 10-Q as a standalone company, which reports on the quarter that ended just prior to the spinoff of BW:

"In the six months ended June 30, 2015 and 2014, we recognized net changes in estimate related to long-term contracts accounted for on the percentage-of-completion basis, which **increased** operating income by approximately \$9.4 million and \$15.7 million, respectively."

In the S-1 for BW from June 2015, we see additional data which shows us that Q115 had a positive revision, and by implication Q215 was also positive...as were the full years of 2012, 2013 and 2014:

"In the three months ended March 31, 2015 and 2014, we recognized net changes in estimates related to long-term contracts accounted for on the percentage-of-completion basis, which increased operating income by approximately \$4.1 million and \$1.7 million, respectively. In the years ended December 31, 2014, 2013 and 2012, we recognized net favorable changes in estimate related to long-term contracts accounted for on the percentage-of-completion basis that increased operating income by approximately \$36.4 million, \$4.3 million and \$64.0 million, respectively."

So, just like BWXT, BW had a pretty impressive track record of positive revision after positive revision.

And then in the very first quarter after BW is free of BWXT (and of the BWXT management team), the façade cracks. A negative revision just happens to show up, worth a heavy -\$11.4m:

"In the **nine months** ended September 30, 2015, we recognized net changes in estimates related to long-term contracts accounted for on the percentage-of-completion basis which **decreased operating income by \$2.0 million.**"

From that point it was basically game over. Q415 and Q116 had smaller positive revisions, and then in Q216 the implosion began. From a later 10-Q describing the stages of the train wreck in hindsight:

"As we disclosed in our 2016 second and third quarter and annual financial statements, we incurred significant charges due to changes in the estimated cost to complete a contract related to one European renewable energy contract, which caused the project to become a loss contract..."

"The second project became a loss contract in the fourth quarter of 2016..."

"The third project became a loss contract in the fourth quarter of 2016..."

"The fourth project became a loss contract in the fourth quarter of 2016..."

By the time Q216 was closed out, the BW stock had already been whacked. This began its multi-year descent into a totally different market cap category in spite of a strong bull market all around it.

Remember, these upward project revisions are ostensibly **surprises**. They're supposed to mean that BW was surprised positively, again and again, by how well its projects were going...until suddenly they were blindsided by the fact that these projects were all dumpster fires of planning and budgeting disasters? And they couldn't manage to figure any of this out until right after they were free of BWXT and its leadership team?

BW was of course suspected by other observers of engaging in aggressive accounting. In addition to the SEC investigating BW's project accounting^{xiii} (they closed the investigation without bringing charges), BW settled a

shareholder lawsuit regarding allegations that it had misrepresented the expected profitability of its long-term projects:

“...the Consolidated Complaint alleges that the Individual Defendants issued and caused B& W to issue clear and continuous public misrepresentations about the Company's true financial condition and business prospects. **From at least June 2015** through at least August 9, 2017, the Individual Defendants publicly represented that the Company's renewable business segment was its key to growth, success, and profit, as the Company shifted away from its former parent company's coal-based focus. The Consolidated Complaint alleges that B&W hastily collected numerous renewable energy contracts to provide the illusion of success, drawing investors in to support the Company. Though the future of the Company seemed on track to the public, the Individual Defendants failed to build the operational capacity needed to **perform on such large contracts in a manner consistent with the Company's budget and schedule...**”^{xiii xiv}

The lawsuit focused on the period during which BW was public, but we’re more interested in the accounting choices made before that, when BWXT’s people were still running the show. That’s when those quarters and years of sizeable positive revisions were made, when BW was still under the purview and corporate leadership of BWXT.

3. BWXT’s departing CFO and Chairman were there when BW was getting dressed up to spin out

BWXT’s CFO just resigned, which we always like to see in a short. Its Chairman *also* gave his own notice just weeks prior to that. . .the combination of which we love to see in a short. And both resignations are taking place as the accounting games we’ve discussed hit their apex.

But on top of all that, the departures of these men are uniquely interesting because both were at BWXT before the spinoff of BW. The BW projects that went bad started doing so only months after the spin. We find it hard to believe that the Chairman and Chief Accounting Officer of BWXT had nothing to do with keeping these problems under wraps when they were still part of BWXT.

We weren’t at the management or board meetings for BW when these multi-year projects were being planned, but we wonder where the buck stopped on the accounting for them, and what kind of pressures middle managers were under to optimistically forecast these projects. These projects were supposedly fine – actually, surprising to the upside with positively revised estimates - as of the spin in mid-2015, but by mid-2016, their “updated” cost forecasts had destroyed BW’s stock. At the very least, there was some delay in recognizing the problems in these projects until they were someone else’s problem.

Sound familiar?

THE “FREE CASH FLOW INFLECTION” IS OVERPROMISED, AND THE BALANCE SHEET IS WEAK

BWXT has been promising, and shareholders have been assuming, a massive inflection in free cash flow in 2023. The problems with this issue cannot be discussed without reference to the underappreciated weakness in BWXT’s balance sheet. Without a major improvement in free cash flow, the balance sheet will be at risk of real stress. The stability of the dividend deserves additional focus from income-oriented investors.

BWXT’s leverage isn’t 2.7x, it’s more like 3.5x (and we think it’s going higher in 2022)

BWXT used to say that it and its [Navy] customer preferred it to have a leverage ratio under 2x, and that it would keep leverage there for a long time:

“If I look beyond 2015, we would like to say that we are going to have a high single to a low double-digit EPS growth over 3 to 5 years while maintaining leverage below [or] at 2x.” – Old CFO on June 2015 investor day

But within three years, it had moved this goalpost too:

“So our leverage ratios, **we came out of spin saying that we’re comfortable, the customer’s comfortable at 2x. Since then, we said we’re comfortable with higher than that.** We feel that we’ll be able to delever it very quickly with the cash generated.” – Old CFO on Q318 conference call

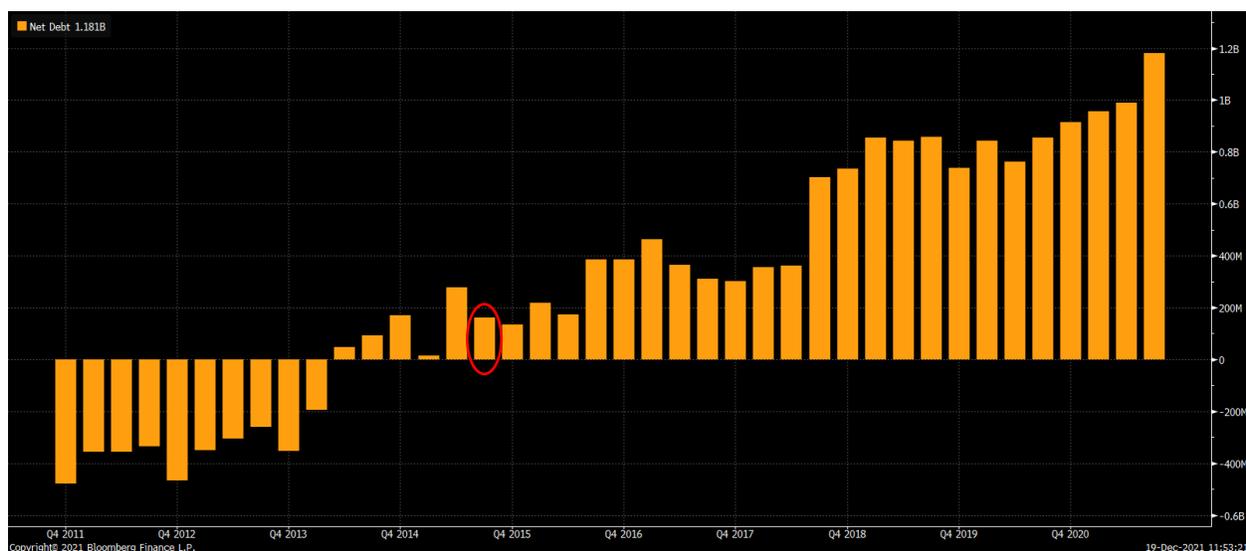
And as of late 2021, the company talks about how its latest level of 2.7x is still plenty low, **and now 2x is the low end, not the high end, of its leverage range:**

“So let’s take a look at the firepower that we have and how flexible our capital structure is presently. We have the free cash flow that we know is coming in, but just look at our balance sheet, stellar relationships with the credit rating agencies, great balance sheet. **We generally run the balance sheet at about a 2 to 3x leverage. Coming from the world of private equity that I used to be in, that’s a very comfortable range for me. I think we have plenty of capacity. We’re up toward the 2.7 zone right now.** We don’t have any maturities. And ultimately, we’ll come into very strong free cash flow, which will be generated from what’s going on from an operating cash flow standpoint.” – New CFO on Nov 2021 investor day

We think that the company needed to move up its leverage range because, somewhere along the line, it decided to pursue something a “public LBO” strategy on this business. BWXT has given over \$1bn of its capital to stockholders since it spun off BW. From its Nov 2021 investor presentation:



But in doing all this capital return since the Q315 spin, the company has found it necessary to add...close to that amount in new debt:



So this company is levered, and it’s more levered than it used to be or said it wanted to be, and it’s levered like this because it has been buying back a lot of stock and paying a lot of dividends.

But just how levered is it really? How much financial risk has management added to this critical, storied American defense supplier in order to make its shareholders happy?

We’ve talked previously about BWXT’s low and deteriorating quality of earnings, so we recommend taking its adjusted EBITDA metric with a healthy dose of skepticism. BWXT did \$400m of adjusted EBITDA through 2021 as we previously showed and which we also discuss in the appendices.

Aside from the questionable utility of this adjusted EBITDA metric in the context of a company whose earnings quality is poor, the practical debt level of BWXT makes its net debt/EBITDA ratio not mid-2s, but mid-3s. The difference is that BWXT’s “debt” for practical purposes needs to include its substantial pension and environmental liabilities. This isn’t complicated, but here’s how we calculate it:

BWX TECHNOLOGIES, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
LIABILITIES AND STOCKHOLDERS' EQUITY

	September 30, 2021	December 31, 2020
	(Unaudited) (In thousands, except share and per share amounts)	
Current Liabilities:		
Bank overdraft	\$ —	\$ 88,694
Accounts payable	137,936	184,392
Accrued employee benefits	74,102	89,740
Accrued liabilities – other	77,872	78,028
Advance billings on contracts	102,370	83,581
Accrued warranty expense	5,513	5,292
Total Current Liabilities	397,793	529,727
Long-Term Debt	1,253,832	862,731
Accumulated Postretirement Benefit Obligation	24,389	25,689
Environmental Liabilities	93,051	84,153
Pension Liability	109,829	144,859
Other Liabilities	32,245	28,576
Commitments and Contingencies (Note 6)		
Stockholders' Equity:		
Common stock, par value \$ 0.01 per share, authorized 325,000,000 shares; issued 127,303,992 and 127,009,536 shares at September 30, 2021 and December 31, 2020, respectively	1,273	1,270

We start with the face of the balance sheet, adding up the debt or fundamentally debt-like items of long-term debt, pension liability, environmental cleanup liability, and accumulated retirement benefit obligations. Then we deduct the cash balance of \$69m, to get “net debt” of \$1.4bn. Against \$400m of LTM “adjusted EBITDA” that’s a net debt/EBITDA ratio of 3.5x. (There are another \$7.1m of environmental liabilities included in Current Liabilities as well, per the notes to the financial statements, but that doesn’t move the needle.)

We don’t think that BWXT’s retirement obligations being included in the debt ratio is really a controversial point. These pension and benefit obligations are real monies that will need to be paid out in the future, even though their exact amounts can vary based on market performance and long-term assumptions. BWXT has already made multiple large contributions in recent years, as well as numerous small payments, and these have impacted cash flows (although we have excluded these payments from our CFO calculations, as previously noted). The fact that pension liabilities aren’t literally called “debt” on the balance sheet means nothing to us, and should mean nothing to anyone, when it comes to evaluating BWXT’s financial strength.

The environmental liabilities, which total nearly \$100m at carrying value, are worth spending a second on. Here’s the relevant language from the 10-K:

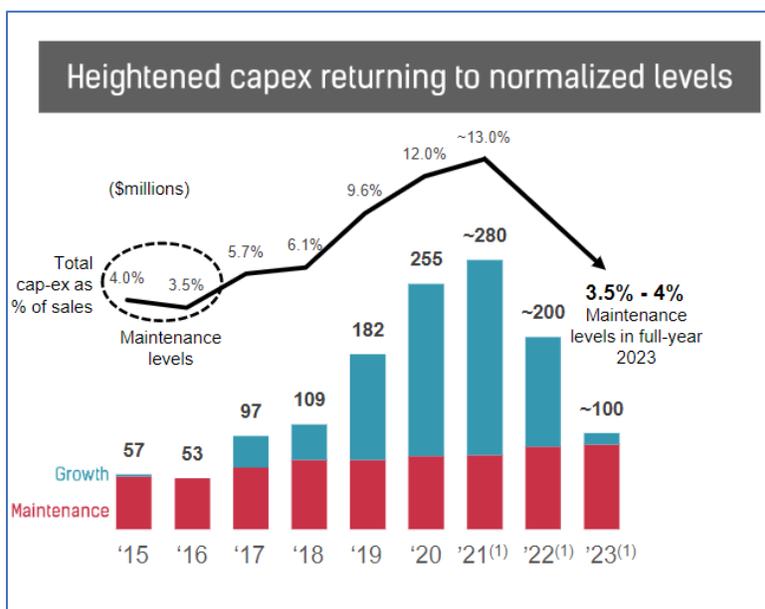
“At December 31, 2020 and 2019, we had total environmental accruals (including asset retirement obligations) of \$91.3 million and \$90.8 million, respectively. Of our total environmental accruals at December 31, 2020 and 2019, \$7.1 million and \$10.4 million, respectively, were included in current liabilities. **Inherent in the estimates of these accruals are our expectations regarding the levels of contamination, decommissioning costs and recoverability from other parties, which may vary significantly as decommissioning activities progress.** Accordingly, changes in estimates could result in material adjustments to our operating results, and the ultimate loss may differ materially from the amounts that we have provided for in our consolidated financial statements.”

Not lost on us is the fact that BWXT gets to estimate the value of this liability. Hopefully they do a better job with that estimate than they have with other accounting estimates!

We also expect BWXT’s debt load to rise in 2022, given their free cash flow trajectory and dividend obligations. If they maintain a similar cash flow from operations and spend ~\$200m as expected on capex, the resulting annual free cash flow will be less than the current annual dividend payment.

If it doesn’t drive growth, it isn’t growth capex

The major part of the “free cash flow inflection story” for BWXT is the idea that capex is going to drop precipitously:



Source: BWXT investor day presentation, Nov 2021

As we previously discussed at length, the capex “return to normal” has been pushed out again and again and maintenance capex seems to keep creeping up. So, we wonder how much credibility BWXT has when it says that 2023 is this time, finally, the year. But we’d look at this from another perspective as well: How much of the capex to date has actually been “growth capex”?

As investment professionals know, free cash flow can be calculated with reference either to total capex (CFFO minus Capex = FCF) or maintenance capex (CFFO minus Maintenance Capex = FCF). We prefer the latter, which we think is fairer to companies making growth investments.

The problem with BWXT’s story here is that despite over half a billion of excess capex, the business hasn’t accelerated, and isn’t expected to do so going forward. So in what world can we call all this spending “growth capex”?

The Street anticipates that in 2023, the year by which BWXT will have ostensibly finished its “excess” capex program, revenues will be \$2.28bn (per Bloomberg). By comparison, BWXT did \$1.80bn of revenues in FY18, when the bulk of its recent capex surge was still in front of it.

Nordion Medical, which is about a \$60m business^{xv}, was bought in the middle of 2018. So roughly \$30m of revenues should be incrementally inorganic in the FY22 number compared to the FY18 number. Laker Energy, which appears to be about a \$40m business,^{xvi} was acquired after FY18. We therefore have approximately \$70m of revenues added inorganically after FY18. So on an organic basis, BWXT is on pace to have grown from \$1.80bn in FY18 to about \$2.21bn in FY23. **That’s an annualized organic growth rate of about 4-5% after all of this capex.** We realize that reported revenues for BWXT are extremely questionable given its aggressive accounting, but bear with us and take them at face value for this part.

By comparison, how fast was BWXT growing in the prior few years? **From the Q315 spinoff of BW through FY18, the organic growth rate looks to be...about 4-5%, BEFORE all of this capex:**

- FY18 revenues of \$1.74bn (ASC 605 basis)
- FY15 ex-spinoff revenues of \$1.42bn (also ASC 605 basis)
- Total revenue growth of \$0.32bn
- Purchase of GE Hitachi Nuclear in 2016 (contributed \$96m of revenues annually based on 2016 contribution of \$2.9m and incremental 2017 contribution of \$92.8m, per 10-Ks) and partial year contribution to FY18 from Nordion Medical of about \$30m
- Total approximate organic revenue growth of \$0.19bn
- $\$0.19\text{bn}/\$1.42\text{bn} = \text{about } 14\% \text{ total organic growth or about } 4\text{-}5\% \text{ annual organic growth}$

So over an eight-year period it really doesn't look to us like all of this growth capex has done anything to enhance...actual growth. (The longer-term outlook isn't any better, as even the Street consensus models a similar growth rate out through 2026.) **If all this growth capex has not improved growth, is it really growth capex at all?**

And if it's not, then it's maintenance capex...in which case we're not going to see actual capex drop all the way to \$100m for a very, uncomfortably long time (unless growth is going to drop as well). But at this point in the evolution of our short thesis, would that even be surprising?

Does BWXT need to write another big pension check in '22?

Now would be a good time to talk again about that pesky pension debt. Yes, we include it in the balance sheet and it nudges up the leverage ratio, but there is another question of when some of this debt will be due.

Let's look at what BWXT said once about its pension contributions:

“We also made \$118 million in voluntary pension contributions in 2018 to take advantage of changing tax law. Our updated actuarial studies now forecast recoverable CAS pension income primarily reported in NOG to remain at similar levels compared to prior years, and we anticipate that continuing through the end of 2023. As a result of the 2018 voluntary contributions, **we continue to anticipate not to have to make any material cash infusions into the pension for the next 3 years until 2022.**” – Q418 earnings call

Since then, BWXT has talked plenty about its CAS/FAS pension differentials and income statement impacts but has talked very little – if at all – about the cadence of future large cash contributions needed. We wonder whether we should be thinking about another nine-figure pension chunk of change showing up sooner rather than later, and how that would translate “proper” or “adjusted” debt into, just...straight up debt that everyone, including lenders and dividend investors, can see clearly.

About that dividend...

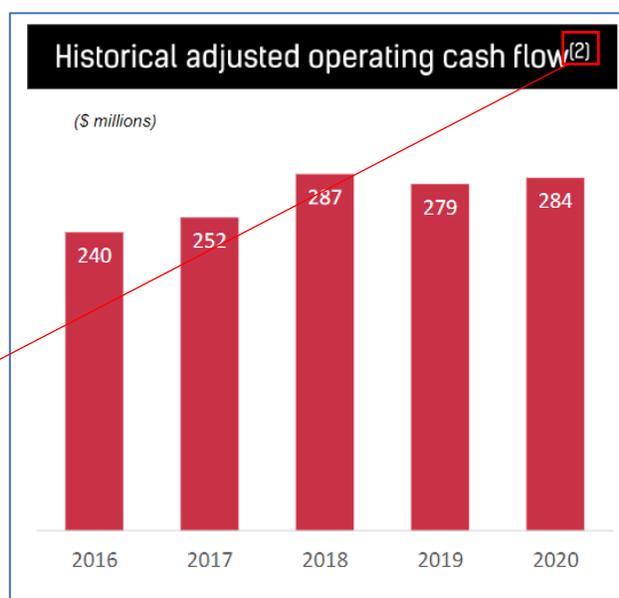
BWXT has used debt to buy back over a billion dollars' worth of its stock over the past decade, and has added balance sheet risk all along the way. **As supporters of the American Navy, we are irritated to have to ask this question of one of its critical suppliers: Was the whole buyback program necessary, guys?**

With a 3.5x “proper” leverage ratio on top of low-quality EBITDA supported by questionable accounting revisions, an onerous pension burden, and negative (or at best unimpressive) free cash flow, we need to talk about the BWXT dividend. Please note, we are not saying that BWXT is necessarily **going** to cut its dividend. We are saying that the dividend **would** be at risk **if** things don’t improve massively, from our vantage point.

As circumstantial evidence, consider the fact that BWXT experienced a (first-ever?) bank account overdraft in Q420 as reflected on the face of its balance sheet. We looked and did not find any prior overdrafts for BWXT in its history as a public company. We think this overdraft was the result of a late Q420 payment due from a customer that didn’t come in until a few days after the quarter:

“Operating cash flow was \$196 million in 2020, down about \$83 million from 2019, primarily driven by a **single \$89 million cash payment that we received on January 4, the first business day of 2021, which we historically had received before the end of the fiscal year.**” – Q420 earnings call in February 2021

BWXT thought this was material enough that it merited later mention on its Nov 2021 Investor Day slides:



2) Adjusted operating cash flow = operating cash flow less net cash used for discretionary pension contributions, excluding any related tax impacts and other one-time items. 2017 adjustments include a \$30 million discretionary pension contribution and 2018 adjustments include \$118 million in discretionary pension contributions. 2020 adjustments include \$88 million late payment from customer received January 4, 2021.

The amount of the late payment - \$88-89m - was spot on with the amount of the bank overdraft as of Dec 31, 2020:

	September 30, 2021	December 31, 2020
	(Unaudited) (In thousands, except share and per share amounts)	
Current Liabilities:		
Bank overdraft	\$ —	\$ 88,694
Accounts payable	137,936	184,392
Accrued employee benefits	74,102	89,740

The bank overdraft just happens to suggest that when BWXT had a somewhat late payment from a customer, it ran into a shortfall of exactly that amount in its bank account, so perhaps it was running things a little too close for comfort.

But more fundamentally, let's look at BWXT's actual, reported free cash flow at the most superficial (Bloomberg-reported) level, on a rolling-LTM basis and compare it to the dividend:



Needless to say, the FCF generation has been mostly insufficient to cover the dividend over the past couple of years. But as we showed before, the reality is actually a little worse, because the past couple of years have included substantial COVID relief subsidies from the US and Canadian governments. Clearly a company with substantial leverage can't just pay a dividend indefinitely out of negative free cash flows. Something simply must change, and quickly. The constantly moved goalposts on capex need to stop moving, now.

Which brings into sharp relief the overarching concept of this entire section: It's not merely a nice-to-have for a levered company like BWXT to have a massive inflection in free cash flow, it's a must-have. And when the EBITDA of the company is goosed with things like suspicious project revisions, aggressive revenue recognition, and/or aggressive expense capitalization, the company is at higher risk of seeing its net debt/EBITDA ratio spike upwards as those convenient EBITDA factors run out or get reversed. With a nominal leverage covenant of 4.0x^{xviii}, BWXT shareholders had better hope the company has no negative project surprises to announce any time soon.

TOO LITTLE, TOO LATE: BY THE TIME BWXT GETS INTO MOLY-99, THE MARKET WILL BE UNRECOGNIZABLE

A big part of the BWXT bull case is this idea that BWXT is going to storm an undersupplied market for medical isotopes, soon, and scoop up money left and right. This is a fantasy. BWXT isn't a credible proponent of its own bull case here because of its repeated failures to anticipate the path forward. But worse, should BWXT even manage to surprise us and deliver on its operational expectations, the market just won't be there in its current form.

Kicking the can down the road on FDA approvals

We previously illustrated the absurd chronology of BWXT's constantly moving goalposts on its timeline for FDA approval of its Tc-99 generator. We won't repeat all that here, we'll just suggest the reader keep it in the background when considering BWXT's credibility on estimating if and when approval will happen.

FDA approval by late 2022? Not likely

Leaving aside the problem of BWXT's credibility on when they can submit their FDA application, let's switch gears to the practicality of what happens after that point. Say BWXT does manage to submit its reference batches to the FDA in early 2022 as (most lately) promised. They claim that they expect FDA approval for their technetium-99 generator as early as late 2022 on this timeline – under or maybe at a year from submission to approval. This timeline does not seem realistic based on what their major up-and-coming competitor has gone through with the same process.

At a conference on moly-99 and related medical isotopes in 2017, various industry experts discussed the lengthy and complex process of submission to and approval from the FDA. It is not generally a one-year process:

The RadioGenix Tc-99m Generating System was subject to a New Drug Application (NDA) by the U.S. Food and Drug Administration (U.S. FDA). Dr. Harvey noted that the regulatory approval process has been long: **NorthStar met with the U.S. FDA to outline a path to NDA submission in 2010 and submitted the NDA in 2013. As of July 2017 the company was awaiting approval of a resubmission** of the NDA to start producing Mo-99. He noted that the **7-year regulatory approval process** compared in length with the conversion from the HEU to LEU production process, which was estimated by global producers to also take 6-7 years.^{xviii}

Dr. Harvey was the representative from NorthStar Technologies. NorthStar is a particularly credible source on this timeline, as they received FDA approval in 2018 and have been ramping up commercial production through today.

The NorthStar case has illustrative information that demonstrates why this process can take so long. It isn't just a matter of "Hey, do these isotopes look okay to you?"

Look at just some of the pitfalls presented to NorthStar during this process, per documented information from the FDA^{xix}:

- The FDA essentially assigned homework and remedial activities to NorthStar to get to the next step of the approval process, some of which sounds to us like a nightmare:

PMR #1 description:
Evaluate the fluid path bioburden and final product endotoxins and sterility in the RadioGenix system at interim timepoints and the instrument expiry from diverse clinical sites.

PMR Schedule Milestones:
 Draft Protocol Submission: 03 /2018
 Final Protocol Submission: 04 /2018
 Study/Trial Completion: 06 /2019
 Interim /Other: 10 /2018
 Final Report Submission: 09 /2019

PMR #2 description:
NorthStar will perform studies to evaluate effectiveness of radiolabeling all commercially available technetium Tc 99m drug product kits in the US (except the ones already evaluated in NDA 202158), as per kit manufacturer's directions using representative sodium pertechnetate Tc 99m injection solutions obtained from three different RadioGenix Systems. The studies for each kit will cover different volumes (from low to high end range) of sodium pertechnetate Tc 99m injection solutions obtained throughout the 14-day shelf life of the potassium molybdate Mo 99 source. The effectiveness study must verify that the radiolabeled kits meet the quality requirement listed in the kit manufacturer's package insert. NorthStar agrees to amend the RadioGenix System labeling based on the result of the study, as appropriate.

PMR schedule milestones:
 Final Protocol Submission: 04/15/2018
 Study/Trial Completion: 04/15/2019
 Final Report Submission: 06/15/2019
 Other: Interim report 11/15/2018

There was a response from NorthStar (01/12/2018) that they agreed with the PMC and the overall plan of the microbiology post approval study. However, it was noted that in accordance to the current plan there could potentially be a 12-month lag time from instrument (RadioGenix System) installation before the FDA would be aware of any potential problems with bioburden/sterility/endotoxins. The FDA then proposed that NorthStar provide summary information. There would be (1) 3, 6, 9, 12 month samples to evaluate prefiltration fluid path bioburden/endotoxins and final product sterility and endotoxins. (2) 10 instruments would be involved at diverse sites. (3) Trends would be

- The FDA even got into the user manual and noted deficiencies with “user friendliness”:

May 2013. The 15 May 2013 meeting package contains a human factor study protocol and three revised user manuals. There were three questions submitted in this meeting package and Question 1 and 3 required a product quality microbiology response. The questions are reproduced below in bold and the microbiology response follows in normal type. A summary of the meeting minutes may be found in DARRTS.

1. NorthStar has reviewed the comments associated with the submitted Operators Manual for “lack of user friendliness” and has made substantial changes not only to the content but to the organizational structure of the manual. The operator’s manual has been re-organized into three Guides as follows:

a. **TechneGen Generator System Operators Guide (94S01916)**
 b. **TechneGen Generator System Controller Applications Guide (94S03230)**
 c. **TechneGen Generator System Accessory Kits and Mo99 Source Assembly Guide (94S03231)**

We haven’t outlined even close to all the “asks” from the FDA between the initial submission of materials by NorthStar and the final approval of its generator product; we just include these examples to demonstrate the long road that BWXT has ahead of it, after it finally manages to submit its application in the first place. It took NorthStar five years to get this done (2013 submission, 2018 approval), and this is why.

(We also conducted interviews with industry experts before taking our short position, as is typical of our research process. We were told by one moly-99 industry executive that it took Curium two more years than

planned to achieve FDA approval for its own generator, but we were unable to independently verify this. We were also told that for BWXT to achieve FDA approval in late 2022 would apparently be “almost superhuman” on the back of a successful Q122 submission, and that “none of the [customers in the marketplace] seem to have any confidence or knowledge or belief that BWX will be there in 2022.” However, we do not publicize our sources unless they give us express permission, so particularly skeptical readers may choose to disregard these anecdotes. Or better still, those readers can do their own expert calls and find the same opinions we found.)

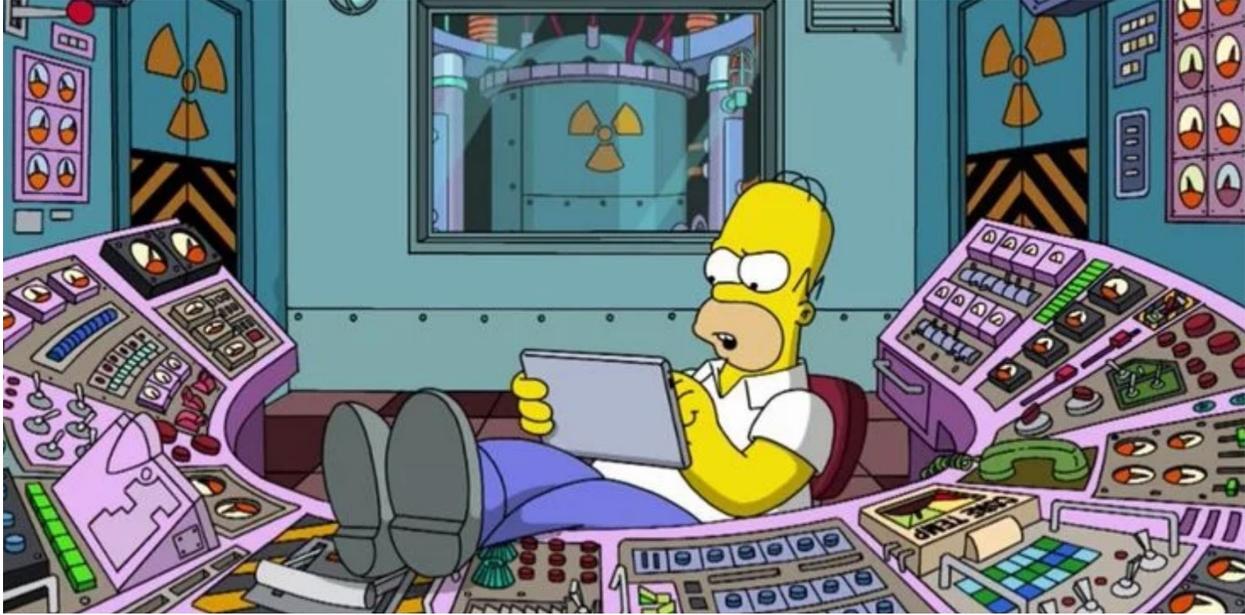
An isotope oversupply problem you can see coming from a mile away

The most appealing part of the medical isotopes story is the fact that there has been a chronic situation of undersupply in this market for many years. For this reason, the United States has encouraged and subsidized the development of new, domestic players, including BWXT but various others, to create onshore capacity. The American government’s patience has been rewarded as new players are finally coming to market in a big way.

The result is that the market is going to be oversupplied if the various competitors – including very much BWXT – have anything like their way in building out their capacity plans.

- NorthStar Medical Radioisotopes, an up-and-coming player, has been investing in new capacity since its first FDA approval in 2018, and is on track to be able to **supply 65-100% of US demand** for moly-99 by 2024-26, per <https://www.itnonline.com/content/northstar-medical-radioisotopes-provides-updates-corporate-progress>
- SHINE, another up-and-coming player, has plants under construction that in total are expected to enable it to supply **70% of global demand** for moly-99:
<https://www.businesswire.com/news/home/20210628005781/en/SHINE-Medical-Technologies-Closes-150-million-Series-C-5-Financing-to-Advance-Nuclear-Fusion-Based-Technologies>
- And BWXT has apparently spent somewhere between \$200-300m to build its own capacity, all of which is of course also entirely incremental to the moly-99 supply
- Other new players such as Niowave and Northwest have come up in our research, but we don’t think it’s necessary for them to be successful for our point to be made

We aren’t nuclear scientists, but we can count, and we’re pretty sure that when enough supply to cover well over 100% (and maybe over 200%) of demand enters a commodity market, that market tends to stop offering much profit for the players involved. We’d emphasize NorthStar particularly in this threat analysis, because they are already producing product today, and have credible plans to take over most of the domestic market alone.

ONLY HOMER SIMPSON COULD CALL THIS STOCK CHEAP

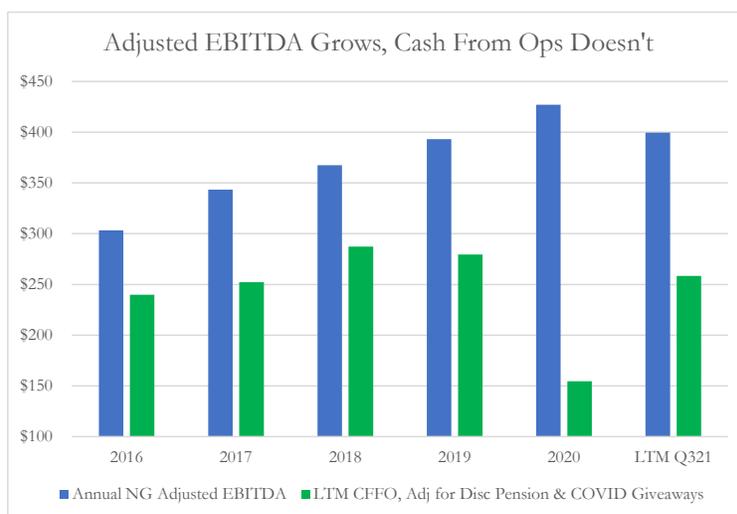
Homer Simpson, inside the nuclear plant, reacts skeptically to Jehoshaphat Research's short thesis on BWXT

If we're wrong, this stock price is still too high

Let's ignore our entire short thesis about accounting games, broken promises by management, financial weakness and everything else, and just take the company's main promise about its future cash flows exactly at face value. The stock is still expensive in this case. We wonder how many investors realize what they are paying for even if they believe the entire management case.

As we showed previously, management has guided to an eventual "normalized" maintenance capex of about \$100m per year. We also showed why this is a stretch. But let's pretend we believe it will happen and happen soon. What free cash flow would result?

To revisit this chart:



On either an LTM basis or a nearly six-year average, the cash from operations of this business is about \$250m per year when you remove both puts and takes from the discretionary pension contributions and the government COVID subsidies. The slightly favorable version of those two is the LTM version, at \$258m.

If BWXT's maintenance capex were actually \$100m, then its underlying, true FCF would be \$158m (CFFO less maintenance capex). This company has a market cap of \$4.4 billion.

In what world is 28x an aspirational estimate of FCF appropriate for a substantially levered business whose FCF and CFFO have been rangebound for six years?

Right now you might be thinking, "maybe the peers trade like this, and that's why the stock is this expensive?" No, not even close; the peers trade at multiples of FCF in the teens. We'll borrow a recent breakdown from Barclays which shows an 18x FCF multiple (5.7% FCF yield) for defense contractors:

Barclays | U.S. Aerospace & Defense

Stock Valuation and Performance

All stock prices are as of 12/16/21 unless otherwise noted.

FIGURE 6
Valuation Comparison

Company	Ticker	Rating	Price Target	Share Price	Market Cap (\$)	Net Debt (\$)	EV (\$)	Net Debt to EBITDA	P/E	EV/EBITDA	FCF Yield	Dividend Yield			
Aerospace OEMs															
Boeing Co	BA	EW	\$220	\$191	109.8	42.1	151.9	10.5x	n/a	68.2x	37.9x	23.3x	-4.2%	3.7%	0.0%
Bombardier Inc	BBD	UW	CS1.25	CS1.53	3.7	5.5	9.2	9.3x	n/a	n/a	15.5x	11.4x	n/a	5.7%	0.0%
Embraer SA	ERJ	NR	n/a	\$14	2.7	9.1	11.9	23.5x	n/a	3.2x	20.5x	n/a	4.9%	0.1%	0.0%
Weighted Average								10.8x	0.0x	64.5x	37.0x	22.4x	-3.8%	3.8%	0.0%
Aerospace Suppliers															
AAR Corp	AIR	NR	n/a	\$35	1.3	0.1	1.4	0.7x	17.5x	12.6x	9.7x	7.3x	6.4%	7.3%	0.0%
Allegheny Technologies Inc	ATI	OW	\$23	\$15	1.9	1.1	3.0	3.4x	n/a	25.1x	9.1x	7.2x	-6.7%	4.8%	0.0%
Atronics Corp	ATRO	NR	n/a	\$10	0.4	0.2	0.5	19.1x	n/a	25.1x	62.1x	59.2x	-0.9%	-0.9%	0.0%
Carpenter Technology Corp	CRS	NR	n/a	\$29	1.5	0.5	1.9	7.8x	n/a	39.3x	33.0x	9.0x	-1.3%	-1.3%	2.6%
HESCO Corp	HE	NR	n/a	\$136	17.2	0.1	17.3	0.3x	59.9x	50.6x	34.4x	29.0x	2.4%	2.6%	0.1%
Hercel Corp	HOL	EW	\$64	\$48	4.0	0.7	4.7	3.5x	201.1x	35.4x	23.0x	15.0x	2.8%	5.5%	0.0%
Howmet Aerospace Inc	HWM	OW	\$38	\$29	12.9	3.6	16.5	3.0x	29.3x	20.4x	13.7x	11.4x	3.3%	4.7%	0.3%
Spirit AeroSystems Holdings Inc	SPR	OW	\$53	\$39	4.0	2.5	6.6	6.1x	n/a	n/a	n/a	15.7x	-5.4%	-5.2%	0.1%
TranSigm Group Inc	TDC	OW	\$710	\$577	33.7	15.2	48.9	7.0x	42.9x	32.2x	22.3x	18.0x	2.3%	3.2%	0.0%
Triumph Group Inc	TGI	UW	\$20	\$16	0.8	1.4	2.2	7.5x	32.2x	16.6x	12.1x	10.7x	-21.4%	2.8%	0.0%
Woodward Inc	WWD	EW	\$125	\$106	6.9	0.3	7.2	0.7x	31.1x	26.0x	16.6x	14.6x	5.1%	4.9%	0.0%
Weighted Average								4.2x	51.1x	33.3x	22.8x	18.3x	2.1%	3.4%	0.2%
Multi-Industry															
Textron Inc	TXT	OW	\$78	\$75	17.1	1.2	18.3	0.8x	22.6x	19.1x	12.1x	10.7x	6.3%	4.9%	0.1%
Honeywell International Inc	HON	OW	\$250	\$210	141.2	8.0	149.2	1.1x	25.9x	23.5x	20.5x	18.8x	3.9%	3.9%	1.9%
Weighted Average								1.1x	25.5x	23.1x	19.6x	18.0x	4.2%	4.0%	1.7%
Defense															
BWX Technologies Inc	BWXT	UW	\$51	\$48	4.6	1.2	5.8	2.9x	15.8x	15.2x	13.8x	13.4x	0.4%	2.9%	1.8%
Curis-Wright Corp	CW	NR	n/a	\$133	5.2	1.0	6.2	1.9x	18.2x	16.4x	11.8x	11.0x	6.7%	7.2%	0.5%
General Dynamics Corp	GD	OW	\$240	\$206	59.2	9.8	69.0	1.9x	17.8x	16.6x	13.6x	12.9x	5.4%	6.0%	2.4%
Huntington Ingalls Industries Inc	HI	EW	\$215	\$189	7.6	2.7	10.4	2.7x	13.8x	13.4x	10.3x	8.8x	5.0%	7.7%	2.6%
L3Harris Technologies Inc	LHX	OW	\$255	\$211	44.5	6.0	50.5	1.6x	16.3x	15.3x	13.6x	13.4x	6.3%	6.0%	2.0%
Lockheed Martin Corp	LMT	EW	\$370	\$345	96.9	8.1	105.0	0.7x	15.4x	12.9x	9.7x	9.8x	6.8%	7.1%	3.3%
Mercury Systems Inc	MRCY	NR	n/a	\$50	2.9	0.2	3.0	0.9x	22.8x	17.5x	15.9x	12.1x	1.1%	4.4%	0.0%
Northrop Grumman Corp	NOC	OW	\$410	\$379	63.4	8.4	71.8	1.3x	14.7x	15.1x	10.7x	11.2x	5.3%	4.6%	1.7%
Raytheon Technologies Corporation	RTX	OW	\$100	\$83	125.3	23.4	148.8	2.4x	19.5x	16.5x	15.0x	13.0x	4.2%	4.8%	2.5%
Weighted Average								1.7x	17.0x	15.3x	12.6x	11.9x	5.4%	5.7%	2.4%
Europe A&D															
Airbus Group NV	AIRPA	OW	EUR 138	EUR 102	92.2	-6.1	86.1	(0.8x)	25.3x	20.0x	16.6x	9.0x	3.1%	4.3%	0.0%
BAE Systems	BAESL	OW	GBP 644	GBP 535	22.4	3.9	26.3	1.1x	11.6x	10.8x	7.2x	6.7x	7.3%	8.3%	4.5%
MTU Aero Engines AG	MTX	OW	EUR 241	EUR 167	10.2	0.9	11.1	1.1x	28.2x	20.9x	14.3x	11.5x	2.6%	3.4%	0.7%
Rolls-Royce PLC	RRJ	NR	n/a	GBP 113	12.7	3.9	16.6	2.2x	n/a	21.0x	9.3x	7.0x	-19.1%	5.3%	0.0%
Safran SA	SAFP.A	EW	EUR 130	EUR 100	48.7	3.1	51.9	1.0x	38.0x	24.8x	15.8x	12.3x	3.4%	3.9%	0.4%
Weighted Average								0.2x	25.4x	20.2x	11.7x	9.6x	2.1%	4.7%	0.7%
Space															
Aerospac/Rockwell	AIRD	NR	n/a	\$45	3.7	-0.5	3.2	(1.6x)	22.3x	22.6x	10.7x	10.5x	5.2%	5.8%	0.0%
Astra Space Inc	ASTR	NR	n/a	\$9	2.2	-0.3	1.9	2.6x	n/a	n/a	n/a	n/a	n/a	n/a	0.0%
Maxar Technologies Ltd	MAXR	EW	\$35	\$27	2.1	2.6	4.7	6.1x	n/a	18.1x	10.9x	9.8x	2.8%	6.0%	0.1%
MDA Ltd	MDATO	EW	CS18	CS9	1.1	0.1	1.2	0.5x	423.7x	33.1x	8.7x	7.9x	2.2%	12.2%	0.0%
Momentus	MNTS	NR	n/a	\$5	0.4	0.0	0.4	na	n/a	n/a	n/a	n/a	n/a	n/a	0.0%
Radwire	RDW	NR	n/a	\$7	0.4	0.0	0.4	(0.2x)	n/a	n/a	74.3x	29.9x	1.4%	4.4%	0.0%
RocketLab USA Inc	RBLB	NR	n/a	\$12	5.5	0.0	5.5	0.0x	n/a	n/a	n/a	n/a	-1.5%	-1.2%	0.0%
Spire Global Inc	SPR	NR	n/a	\$3	0.5	-0.2	0.3	4.4x	n/a	n/a	n/a	n/a	n/a	n/a	0.0%
Virgin Galactic Holdings Inc	SPCE	NR	n/a	\$14	3.7	-0.6	3.1	2.3x	n/a	n/a	n/a	n/a	-6.8%	-9.5%	0.0%
Weighted Average								1.2x	28.2x	8.0x	5.3x	4.1x	-0.3%	6.4%	0.0%
Satellite Communications															
AST SpaceMobile	ASTS	NR	n/a	\$8	1.5	-0.2	1.3	2.8x	n/a	n/a	n/a	n/a	-9.6%	-62.6%	0.0%
Eutelsat Communications	ETLPA	OW	n/a	\$12	2.8	2.7	5.5	2.6x	13.6x	10.7x	5.3x	5.5x	22.6%	17.0%	8.7%
SES SA	SESGPA	OW	n/a	\$8	3.6	2.8	6.4	2.3x	15.6x	16.8x	5.3x	5.3x	21.1%	21.2%	5.8%
EchoStar	SATS	NR	n/a	\$26	2.2	0.0	2.2	(0.0x)	12.7x	25.8x	3.0x	3.3x	6.7%	6.2%	0.0%
Telestar	TSAT	NR	n/a	\$32	1.6	0.0	1.6	na	na	na	na	na	n/a	n/a	0.0%
Weighted Average								1.5x	11.9x	14.5x	4.0x	4.1x	15.0%	13.4%	4.4%
Government Services															
Booz Allen Hamilton	BAH	EW	\$90	\$83	11.7	1.4	13.1	1.6x	19.2x	20.6x	15.3x	14.8x	4.3%	5.8%	1.8%
CACI International Inc	CACI	OW	\$320	\$266	6.8	1.6	8.4	2.5x	13.6x	13.9x	12.8x	11.9x	6.7%	10.7%	0.0%
KBR	KBR	NR	n/a	\$45	6.3	1.4	7.7	2.3x	19.2x	18.1x	12.8x	11.9x	2.6%	5.7%	1.0%
Leidos Holdings Inc	LDOS	OW	\$115	\$89	12.8	4.6	17.4	3.0x	13.2x	12.4x	11.3x	11.1x	6.7%	7.9%	1.7%
ManTech International Corp	MANT	NR	n/a	\$70	2.9	0.1	3.0	0.3x	18.8x	20.5x	11.4x	12.0x	6.6%	4.2%	2.1%
Perspecta	PRSP	NR	n/a	\$29	4.7	2.6	7.3	4.1x	15.4x	13.6x	11.3x	11.5x	13.7%	14.4%	1.0%
Science Applications International Corp	SAIC	OW	\$105	\$84	4.9	2.3	7.3	3.0x	9.4x	12.1x	9.2x	10.9x	15.9%	9.3%	1.8%
Vectrus	VEC	NR	n/a	\$44	0.5	0.1	0.7	1.5x	8.7x	8.3x	7.7x	7.3x	2.3%	2.4%	0.0%
Weighted Average								2.4x	15.5x	15.7x	12.4x	12.2x	7.1%	8.0%	1.3%

Source: Bloomberg and Barclays Research. U.S. Aerospace & Defense industry view is Neutral. HON is covered by U.S. multi-industry analyst Julian Mitchell with a Neutral industry view. BAE Systems covered by European Aerospace & Defense analyst Charlotte Keyworth with a Neutral industry view. Airbus, MTU Aero and Safran SA covered by European Aerospace & Defense analyst Milene Kerner with a Neutral industry view. Using calendar year consensus estimates for non-covered companies, Barclays calendar year estimates for covered companies.

Stock Rating: OW = Overweight; EW = Equal Weight; UW = Underweight; RS = Rating Suspended, NR = Not Rated. For full disclosures on each covered company, including details of our company-specific valuation methodology and risks, please refer to <http://publicresearch.barcap.com>. Note: BBD stock price is CAD.

We'd also emphasize a few facts about BWXT that make it even more expensive relative to the peer set than it would appear:

- The 28x FCF multiple we calculated for BWXT is based on a 2023 number but the peer group multiple above is based on this year
- Even if you use Barclays' net debt/EBITDA ratio (ours is higher), BWXT is the most levered company in the peer group
- Not for nothing, BWXT's EV/EBITDA multiple is close to the highest of the group. And we obviously think that its EBITDA is tremendously low-quality, given our forensic analysis

BWXT stock today is much too expensive, even if we're wrong. If we gave management the benefit of the doubt that it clearly does not deserve, and we put a peer-like (teens) multiple on this pie-in-the-sky free cash flow, we would still get to a price in the 20s per share.

APPENDICES

BASIC BUSINESS AND INDUSTRY DESCRIPTION

General business model, description, and key customers

BWXT is an industrial manufacturer and service provider focused on nuclear technologies for the US Navy and North American nuclear industry. It is best known for its provision of high-complexity nuclear components, such as nuclear reactors, to the US Navy, which is the customer responsible for most of its revenues. Downstream in the value chain, other companies (such as Huntington Ingalls, ticker HII) assemble the ships with BWXT components.

Aside from selling its nuclear propulsion components to the Navy, BWXT also operates in the commercial nuclear industry, primarily in Canada. BWXT is best known in the Canadian nuclear industry as a manufacturer of large components for nuclear plants, but also participates in site cleanup operations, nuclear plant refurbishment activities, nuclear fuel processing, and related activities.

In 2017, BWXT also started talking seriously about its ambitions in the nuclear medicine (medical isotopes) business, which is adjacent to its other nuclear activities. BWXT acquired a medical isotope business in 2018 and has been investing heavily in construction of facilities to produce associated isotopes for sale into this market.

Most of BWXT's work is performed under long-term contracts. Only the medical business, a small part of the overall revenues which was picked up in the 2018 acquisition, sees material revenues under the point-in-time revenue recognition model.

Brief history of BWX Technologies

BWXT has a storied and complicated corporate history. Its roots go back to Babcock, Wilcox & Company, founded by two eponymous creators in 1867. The founders were industrious engineering pioneers who created new technologies that transformed the practice of power generation. Over the decades the company evolved to manufacture power generation and other systems for industry, utility, and military use. (Some highlights for Babcock and Wilcox steam boiler and nuclear technologies include their uses in the Manhattan Project, the first New York City subway system, and the world's first nuclear-powered submarine.) And of course, today the company's systems are powering, among many other things, US Navy submarines which are some of the most important deterrent assets held by the American military.

Whatever one's views on BWXT's corporate accounting practices, it cannot be denied that the company and its employees have a proud engineering history and a vital place in the American military-industrial complex.

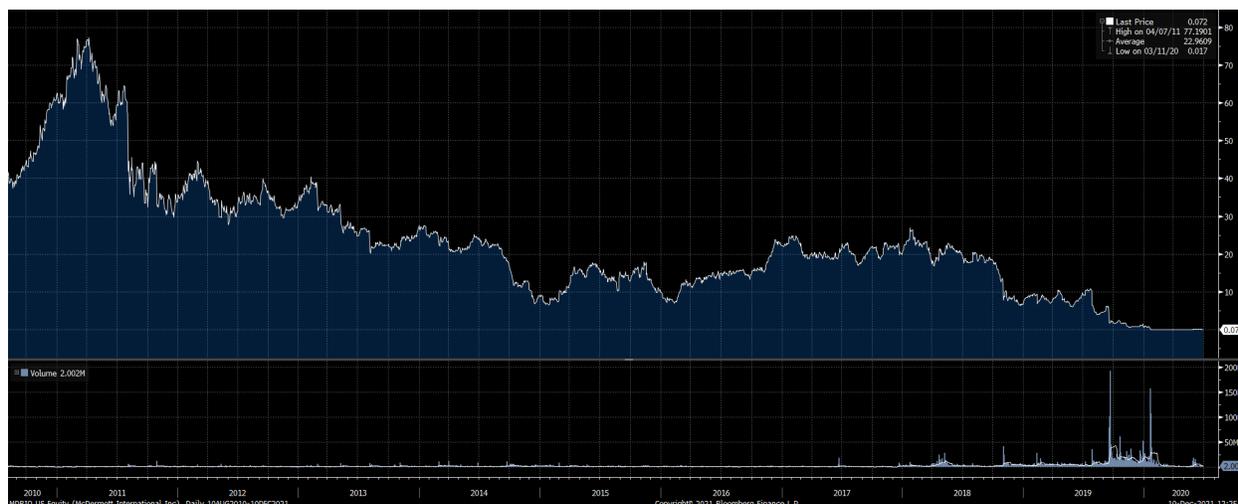
The complicated part of BWXT's corporate history relates to its corporate actions in recent decades. In 1978, Babcock & Wilcox was acquired by McDermott. In 2000, B&W filed for bankruptcy due to asbestos costs.^{xx} It emerged from bankruptcy in 2006 and McDermott announced in 2009 that B&W would be spun out as an independent public company.

Then in 2015, B&W spun out its Power Generation business. The nomenclature chosen here was confusing, as the "Remainco" was renamed to BWX Technologies (ticker BWXT), and the "Spinco" Power Generation business was given the name Babcock & Wilcox Enterprises (ticker BW). This naming decision may have been

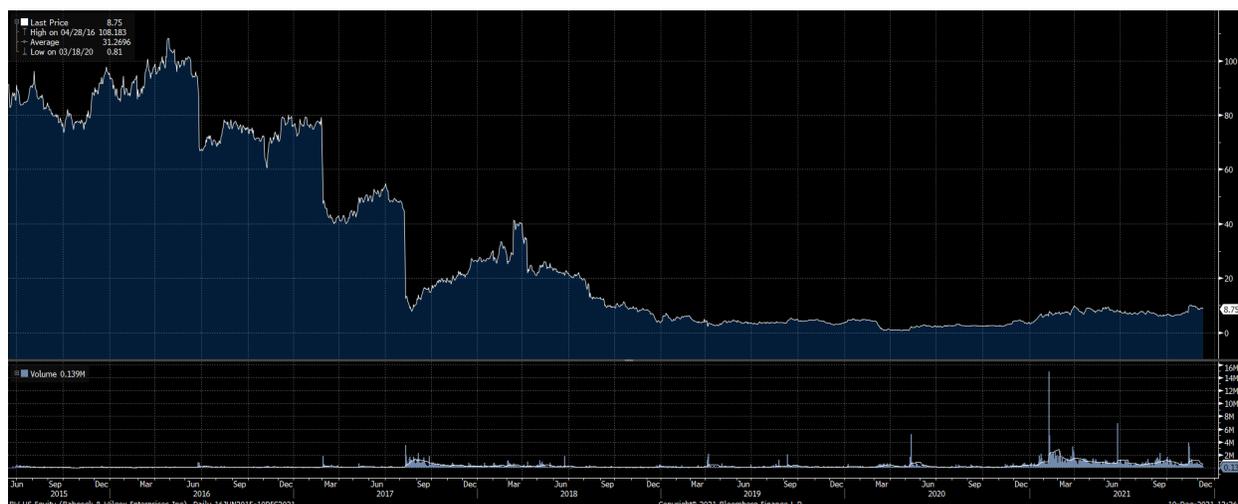
a throwback to Babcock & Wilcox’s original business of making steam generating equipment and other non-nuclear power plant components, in that the company with the “older” technology got to keep the original name. In general, BWXT kept the nuclear-facing businesses, while BW left the parent company and took the steam generating systems business.

We can’t write about the corporate actions of BWXT’s parent (McDermott) and child (BW) without mentioning the project and accounting woes that both had. Both of these companies were arguably using aggressive project accounting to cover up losses, and both were investigated by the SEC for such. Needless to say, this didn’t help their stock prices.

This is a chart of McDermott’s stock price from its spinoff of Babcock & Wilcox until its eventual delisting:



And this is a chart of BW’s stock price since its spinoff from what we now call BWXT:



We don’t believe in punishing the child for the sins of the father (pardon us for mixing analogies). BWXT isn’t guilty of anything by association alone.

BACKGROUND ON RECENT DEVELOPMENTS AND UNUSUAL TOPICS

Pension reimbursement reduction

Like other government contractors with pension plans, BWXT receives partial reimbursement from the federal government for pension costs incurred in connection with work performed for the government. However, the money that BWXT collects from these reimbursements is going to decline starting imminently:

“[Certain unrelated earnings] tailwinds would have resulted in earnings of about \$3.20 to \$3.40 per share for next year prior to any pension changes. However, the enacted American Rescue Plan Act, or ARPA, included provisions to help corporations defer pension funding through utilization of discount rates that are higher than current interest rates. Given our funding status, the adoption of higher interest rates for cash **results in a reduction of cash recoverable pension costs** that we had previously expected to maintain in the P&L through 2024. Although **cash pension income is rolling off quicker than previously anticipated**, we remain confident in our EBITDA growth guidance as we had always contemplated this as a future headwind in the latter half of our medium-term framework.

With our actuarial update, **we now anticipate a \$17 million pension headwind in 2022**, which would negatively impact earnings by about \$0.15 per share.”

We assume that the impact of this drop in cash reimbursements on operating cash flow is similarly about \$17m, meaning we expect an incremental headwind of this amount to operating cash flow in 2022 and beyond.

CFO and Chairman resignations and new CFO

On October 21, 2021, BWXT’s Chairman informed the Board that he would be leaving that position at the next annual shareholder meeting. This Chairman is an unusually important figure within the company compared to typical chairmen. He was previously the CEO of McDermott until the spinoff of B&W, the CEO of B&W when it was a subsidiary of McDermott, and the COO of BWXT, along with other roles. He was responsible as Chairman of BWXT for spinning out the eventual disaster of a Power Generation business (BW) from it.

Barely two weeks after the Chairman gave his notice, the CFO followed suit. But instead of giving months’ notice, the CFO gave only days’ notice – 11 days to be precise.

BWXT chose to replace the outgoing CFO with a gentleman who had previously been on the Board as a result of his position with Blue Harbour Group, an activist shareholder that had owned BWXT stock in the past. Blue Harbour sold out of its entire position from BWXT in 2017 at prices close to what prevail today.^{xxi} However, their representative chose to remain on BWXT’s board, eventually becoming Chief Strategy Officer in 2020 and CFO with the above resignation.

Missile tube defects and business exit

In the middle of the last decade, BWXT started talking about, then bidding on, and then winning opportunities to make missile tubes for ballistic submarines. This was an adjacent opportunity that, at least superficially, made sense as a scope expansion for the business.

The problem was that BWXT seems to have overestimated the profitability of these long-term missile tube contracts. The other problem was that BWXT screwed up the manufacture of these missile tubes and had to spend tens of millions of dollars rectifying them. BWXT later got out of the missile tube business, claiming it wasn't profitable enough in general – which is curious in light of their forever-net-positive earnings revisions track record.

Medical isotopes business entry

BWXT's stock has received a lot of positive attention regarding its opportunity in medical isotopes. Similar to missile tubes, this is an adjacent opportunity that the company began talking about in the preceding decade.^{xiii} Technology from the company's Nuclear Operations Group was identified as pertinent to the problem of the domestic supply of molybdenum-99 (or moly-99) isotopes, a problem which the US government was trying to solve over ten years ago by encouraging and subsidizing new domestic manufacturing. These isotopes are used in the creation of nuclear medicine products for medical imaging (think of x-rays taking pictures of your body while a radioactive element courses through it to paint the target).

BWXT has been increasingly investing in medical isotopes, most notably with its acquisition of Nordion Medical in 2018, and with hundreds of millions of dollars of capex to stand up this business.

BACKGROUND ON THE INDUSTRY: NUCLEAR COMPONENTS AND SERVICES

Suppliers/costs

BWXT's supply chain is of medium quality, because some of its products come from sole-source suppliers. The US government invests in maintaining the readiness of those suppliers, but price competition amongst suppliers is not really a strength for BWXT in these cases. Carbon and steel are key raw material inputs and widely available.

Customers/distribution/switching costs

Customer concentration is a major issue for BWXT. The US government accounts for nearly 80% of revenues, because the Nuclear Operations Group is virtually entirely dedicated to serving the US Navy (who else is buying American-made nuclear sub reactors?).

Outside of this business, there is additional customer concentration in the Nuclear Power Group, where almost all revenues are earned by two Canadian customers, Bruce Power and Ontario Power Generation, or OPG. In our discussions with Canadian nuclear industry experts as part of our background research we heard consistently about these two customers.

Barriers to entry

The barriers to entry in BWXT's business are a clear strength. An upstart or foreign competitor would have a hell of a time convincing the Navy to switch away from BWXT, its sole source on key nuclear components and a provider of these since the Eisenhower administration.

In the Nuclear Power Group, barriers to entry are meaningfully lower in some areas. There are a number of competitors who can offer nuclear components, servicing, and – in the case of the medical side of the business – medical isotopes. BWXT bids competitively for nuclear plant refurbishment work, and in the medical isotope business which has received much fanfare as a growth opportunity, there are various new entrants with capital, production facilities, and/or requisite FDA approvals to sell in the US. Medical isotopes are a global commodity, so competitors in other countries compete globally with one another and capacity conditions impact pricing.

THE BULL CASE

The following subsections describe some of the key reasons why a shareholder might own BWXT today.

Monopolistic nuclear propulsion business model



BWXT has market leadership positions in its main end markets, including being the only supplier of some of its major components to the Navy. The company is effectively “the industry” in naval nuclear propulsion technology, which is where most of its revenues come from. If you bring up BWXT with a bull you’ll likely hear this item mentioned first or second in reasons to own this “safe” name. It is of course a perfectly legitimate fact: BWXT is dominant in the naval nuclear propulsion business and it’s hard to imagine this changing in the foreseeable future.

Part of what makes BWXT’s position so strong is the fact that so much of its work is so complex and highly regulated. The process of refueling a nuclear aircraft carrier – which to the layperson doesn’t sound like a big deal (filling up the gas tank?) – was suggested once by experts as possibly “the most challenging engineering and industrial task undertaken anywhere.”^{xxiii} This business is BWXT’s to lose.

US Navy investment growing in importance against a rising China

The Chinese Navy currently has more ships than the United States.^{xxiv} Proponents of the claim of American naval superiority will argue that America has *better* ships. Whichever matters more is almost besides the point for BWXT. Whenever a military comparison is made between America and its number one geopolitical rival, naval force projection capability quickly finds its way into the process, and the US cannot afford to slow down appreciably on its shipbuilding - regardless of whether a Democrat or Republican administration is in power. This necessity to continue to develop the ship and submarine fleet provides a reasonable floor to the amount of work that BWXT will have.

Stable, predictable demand and long-term contracts

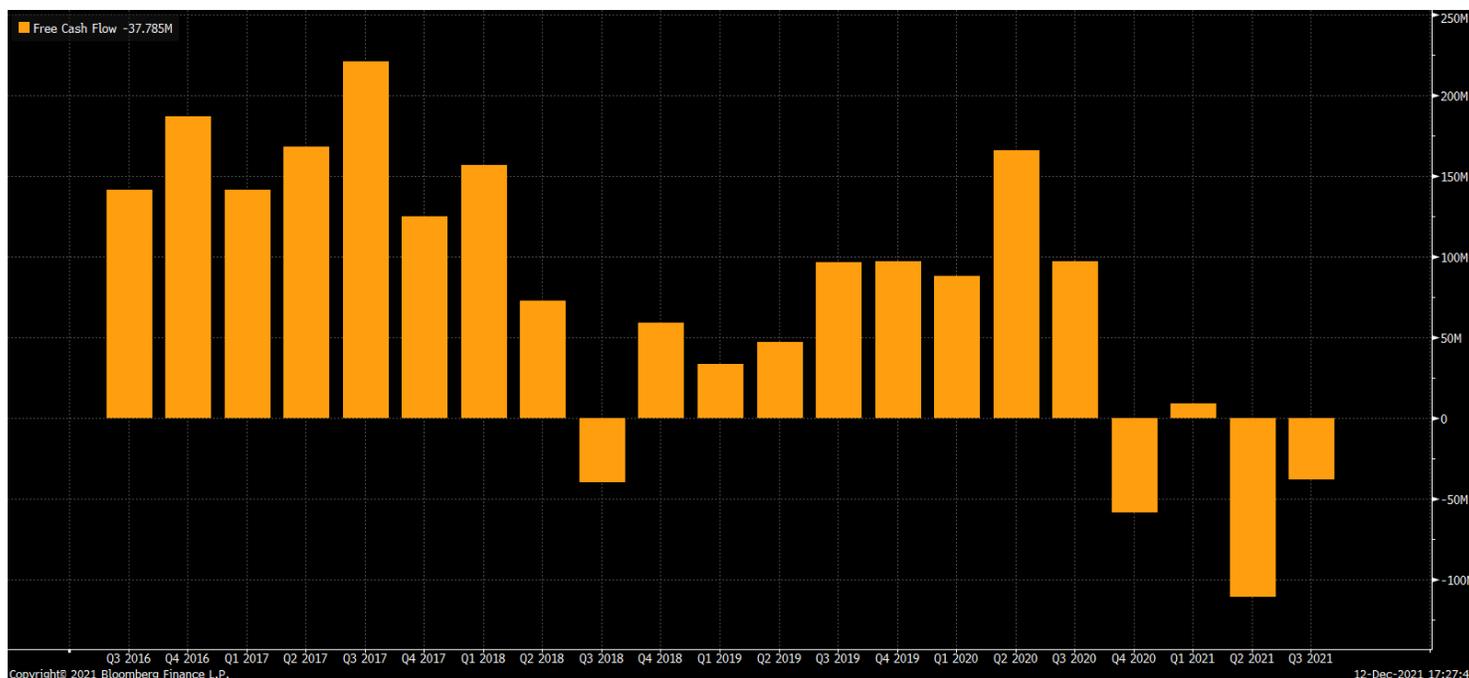
The US plans its carrier and submarine procurement many years in advance. Here is the expected nuclear-powered ship procurement plan for the coming decades, courtesy of BWXT’s investor relations department:

Revenues by contract type were as follows:

	Year Ended December 31, 2020			
	Nuclear Operations Group	Nuclear Power Group	Nuclear Services Group	Total
(In thousands)				
Fixed-Price Incentive Fee	\$ 1,226,770	\$ 1,578	\$ —	\$ 1,228,348
Firm-Fixed-Price	306,296	296,394	32,334	635,024
Cost-Plus Fee	112,479	—	94,320	206,799
Time-and-Materials	712	73,297	9,839	83,848
Segment Revenues	\$ 1,646,257	\$ 371,269	\$ 136,493	\$ 2,154,019
Eliminations				(30,503)
Revenues				\$ 2,123,516

Free cash flow inflection to arrive within 1-2 years

BWXT has said that it expects capex to peak in 2021 at \$280m, reduce in 2022 to about \$200m, and then “ultimately” hit a maintenance level of \$100m^{xxxv} which will result in enhanced free cash flow to equity. Considering that BWXT has negative free cash flow on an LTM basis and generally declining rolling-LTM free cash flow since the 2015 spin-off of the B&W business (despite two sizeable acquisitions), this claim has some real power in keeping bulls from giving up on the story:



We calculate \$258m of LTM operating cash flow for BWXT, net of COVID subsidies, into Q321. If we subtract \$100m of promised “maintenance” capex from that, we get \$158m of “normalized” free cash flow.

Growth opportunity in medical isotopes business pending FDA approval

Medical isotope opportunities are mostly incremental to BWXT, as the company currently has only a small medical isotope business today but is investing heavily in capacity to produce new products, primarily moly-99 which becomes TC-99. FDA approval is most recently said by the company to be coming in late 2022 or just after that:

“So we plan to submit to the FDA -- submit application to the FDA. And as previously indicated. And our plan is this will be around Q1 next year. Then approval after that is obviously under the purview with the FDA, but we will seek priority review. And if successful, we would hopefully get approval **either at the end of next year or a little bit afterwards**. So that's the time line we are driving for at the moment.”

BWXT says that the technetium-99 generator market is worth about \$400-500m worldwide of revenues across all suppliers.^{xxvi}

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ENDNOTES

ⁱ “Obviously, we have very favorable payments from the majority of our business being one customer.” – BWXT, Q317 earnings call, answering a question about cash flows

“You’ve got to remember that when we talk about our largest customer, the U.S. government, we do have terms by which we bill twice a month. And when we bill, we get paid very quickly. So there is an initial pop of working capital, but we tend to manage that.” – Q220 earnings call

ⁱⁱ “It is worth noting that none of the affected missile tubes were integrated into a submarine. After completing a joint investigation with our customers, we determined that the issues and the rework effort were more substantial than previously contemplated. Accordingly, we took an incremental \$26.7 million reserve in the third quarter, which we estimate will cover the expected repairs with a reasonable contingency for residual uncertainties in cost.” – Q318 earnings call

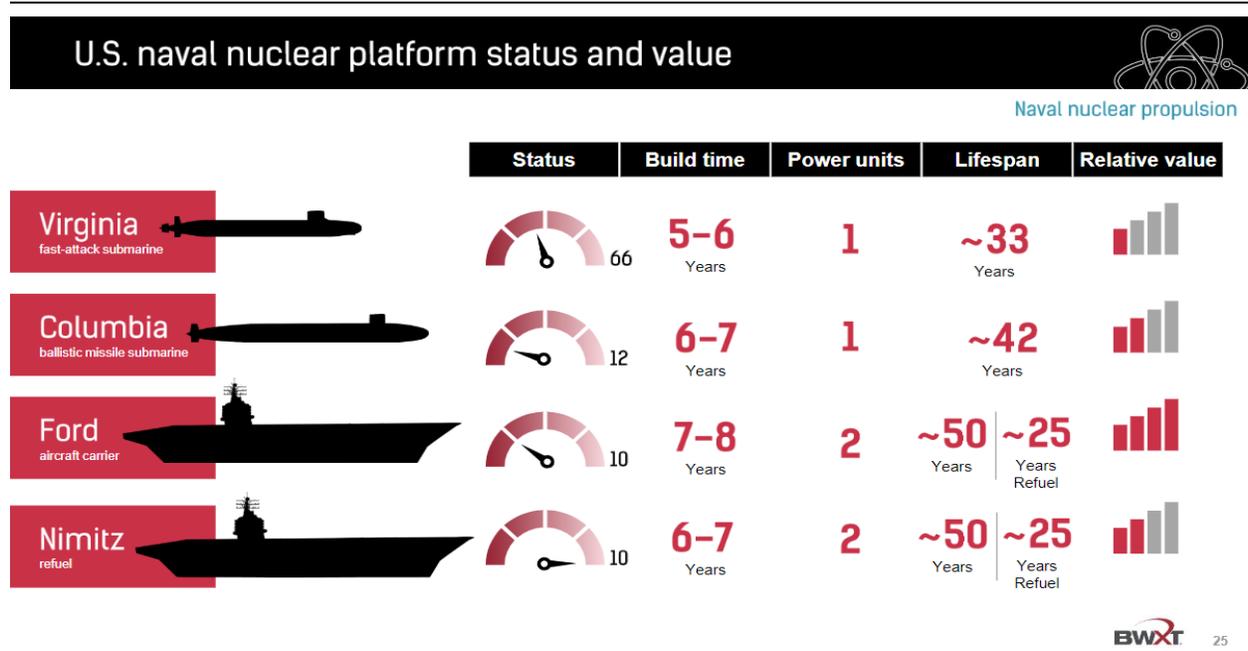
“Outside of nuclear propulsion and missile tube repair campaign is trending positively with about 60% of the missile tube welds in repair or complete. We still expect to wrap up majority of the repairs by the end of the year and complete the remainder of the missile tube backlog in 2021.” – Q319 earnings call

“The team has completed all weld repair efforts, and we expect to complete the remaining backlog for missile tube production as that program rolls off in the coming year or so.” – Q420 earnings call

ⁱⁱⁱ We use the actual numbers since Q118 when 606 became available, and prior to that, we use 605 numbers and adjust them by applying a delta equivalent to the change in both the asset and liability sides that was created in Q118.

- a. For instance, the net PoC DSO in Q118 using 606 accounting was 66 days and using 605 accounting it was 71 days, for a difference of -5 days under 606.
- b. In Q417, the net PoC DSO is only available using 605 accounting and comes in at 88 days. We therefore subtract 5 days to arrive at an estimate of 84 days under 606 accounting.
- c. As a sanity check, we’d point out that from 2016-2018, net PoC was unchanged under a consistent 605 reporting regime (Q116-Q418), including the missile reserve adjustment; but from 2019-Q321, under a consistent 606 reporting regime, it exploded. The point is, our 606-to-605 “adjustment,” while a hassle to do, doesn’t really change much. It just allows us to have a simpler chart with one line (all “606”) instead of two (one for 605, one for 606). You’re welcome.

^{iv} “Relative value” bars on the right indicate that the construction of a new carrier is by far the highest-value project (Ford-class are under construction while Nimitz-class are in the fleet already and experiencing periodic refuelings):



v <https://www.dailypress.com/business/shipyards/dp-nw-ford-20210523-zegucgizcjbenk2frqsurv46e4-story.html>

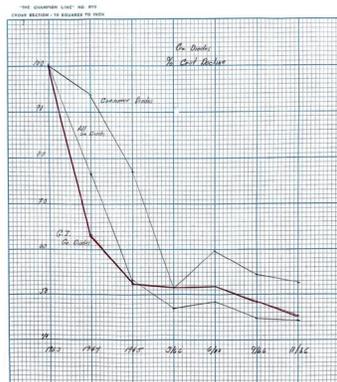
vi <https://news.usni.org/2019/08/06/bwxt-may-stop-making-ssbn-missile-tubes-leaving-single-supplier>

vii Q321 10-Q, page 23.

viii <https://bcghendersoninstitute.com/the-experience-curve-chart-of-the-week-28-2019-19a6fd0edf2>



The Original "Experience Curve" by Bruce D. Henderson



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ix <https://www.thenationalpastimemuseum.com/article/1916-new-york-giants-26-game-win-streak/>

x “And lastly, on the regulatory front, we are pleased with our interactions with the FDA. We expect to irradiate moly-99 reference batches in the summer of 2020 and anticipate FDA approval of our technetium-99 generator, supporting first revenues in the first quarter of 2021.” – Q318 earnings call

xi BWXT provided adjusted EBITDA for Q321, Q320, 9m20, FY20, and 6m21. That’s enough to figure out LTM Q321 (Q420 \$105m + 6m21 \$190m + Q321 \$106m).

xii <https://www.bizjournals.com/charlotte/news/2018/03/15/troubles-deepen-at-babcock-wilcox-as-sec-launches.html>

- xiii <https://sec.report/Document/0001630805-19-000110/> “Babcock & Wilcox Enterprises, Inc. (the "Company")...reached an agreement in principle with plaintiffs' counsel to resolve (a) three separate but substantially similar derivative lawsuits naming the Company and certain of its present and former officers and directors as defendants...The Stockholder Litigation Settlement Agreement was filed with the United States District Court for the Western District of North Carolina on June 25, 2019 and preliminarily approved by that Court on August 12, 2019.”
- xiv <https://robbinsllp.com/wp-content/uploads/2019/08/Stipulation-and-Agreement-of-Settlement.pdf>
- xv There are roughly \$15m of point-in-time revenues each quarter at BWXT and we believe these are almost entirely from the Medical (isotopes) business.
- xvi BWXT 10-K for 2021: “This was primarily related to an increase in revenues of \$38.0 million associated with the acquisition of Laker Energy Products during the first quarter of 2020.”
- xvii “The Credit Facility includes financial covenants that are tested on a quarterly basis, based on the rolling four-quarter period that ends on the last day of each fiscal quarter. The maximum permitted leverage ratio is 4.00 to 1.00, which may be increased to 4.50 to 1.00 for up to four consecutive fiscal quarters after a material acquisition.”
- xviii <https://www.nap.edu/read/24909/chapter/8#32>
- xix https://www.accessdata.fda.gov/drugsatfda_docs/nda/2018/202158Orig1s000ChemR.pdf
- xx <https://jenner.com/library/news/7375>
- xxi From www.sec.gov, note seller (Blue Harbour) and sale price (\$45.67):

SEC Form 4		FORM 4			UNITED STATES SECURITIES AND EXCHANGE COMMISSION				OMB APPROVAL		
<input type="checkbox"/> Check this box if no longer subject to Section 16: Form 4 or Form 5 obligations may continue. See Instruction 1(b).		Washington, D.C. 20549				OMB Number: 3235-0287		Estimated average burden hours per response: 0.5			
STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP											
Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940											
1. Name and Address of Reporting Person* Blue Harbour Group, L.P.			2. Issuer Name and Ticker or Trading Symbol BWX Technologies, Inc. [BWXT]			5. Relationship of Reporting Person(s) to Issuer (Check all applicable) Director <input checked="" type="checkbox"/> 10% Owner <input type="checkbox"/> Officer (give title below) <input checked="" type="checkbox"/> Other (specify below) <input type="checkbox"/> <i>See Remarks</i>					
(Last) 646 STEAMBOAT RD.			3. Date of Earliest Transaction (Month/Day/Year) 03/07/2017			6. Individual or Joint/Group Filing (Check Applicable Line) Form filed by One Reporting Person <input checked="" type="checkbox"/> Form filed by More than One Reporting Person <input type="checkbox"/>					
(Street) GREENWICH CT 06830			4. If Amendment, Date of Original Filed (Month/Day/Year)								
(City) (State) (Zip)											
Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned											
1. Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)	4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5)	5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)				
Common Stock, par value \$0.01 per share ("Common Stock")	03/07/2017		S		5,273,159	D	\$45.67	5,287,927	I	See footnote ⁽¹⁾⁽²⁾	

Blue Harbour completed the rest of its sales in smaller blocks soon after.

xxiii The first mention of the phrase “medical isotopes” that we could find occurred in the Sept 2011 Babcock & Wilcox investor day: “We're also involved in taking the technology that actually came out of the NOG group to market, and it's to address a very important issue with respect to the supply of Medical Isotope here in the United States and globally. Two aspects drive this technology: One is nonproliferation, which is a low-enriched approach to generating molybdenum-99, which creates Technetium that's used for cardiovascular investigation and cancer identification within patients. “

xxiii https://www.rand.org/pubs/monograph_reports/MR1632.html “The midlife refueling/complex overhaul (RCOH) of a nuclear aircraft carrier may be the most challenging engineering and industrial task undertaken anywhere. In addition to refueling the onboard reactor, a variety of maintenance and repair actions must also be undertaken, all while the entire ship is being modernized. The midlife refueling/complex overhaul (RCOH) of the USS Nimitz (CVN 68), completed in 2001, took five years of planning and three years of execution.”

xxiv <https://www.navytimes.com/news/your-navy/2021/04/12/chinas-navy-has-more-ships-than-the-us-does-that-matter/>

xxv BWXT has mentioned this expected free cash flow inflection in multiple contexts, and has mentioned the expected drop in capex over multiple years, but recently at the Investor Day in Nov 2016: “And so in 2022, our CapEx will step down meaningfully. We're guiding to about a \$200 million number next year, and ultimately, down to a \$100 million number, which is really our maintenance CapEx level. We'll continue to look for what to do with that free cash. “

xxvi Nov 2021 investor day: “If we compare it to our new process when approved, we'll be irradiating in commercial power reactors. And then we'll be moving the product up the road to process in Kanata, where we do the radiochem, radiopharm and generator manufacturing. We don't use uranium. So this has so many advantages over the current

system. It's a real step change in dependability. So we plan to come into this market and really have a big market impact, if I can say that. If you look at -- this is just looking at the technetium generator market worldwide. It's between \$400 million and \$500 million worldwide, maybe slightly less than half in the U.S. And our strategy is to go first in North America.”