Bloodtear Industy Index Report Version 3

(Inferno - May 2012)

Since the Dominion expansion there has been a new sovereignty mechanic that allows the development of system indices based on usage levels. It was quickly noted that raising the military index was extremely easy and took little time to maintain, but that the industry index would seemingly never increase despite how many miners you had.

The Bloodtear mining fleet has personally created seven level 5 industry systems over the past two years, and monitored them to gather this information. There have been a few major changes to the mining system since report 2, this report will cover those changes with up to date information. The hidden belts have been stealth buffed to contain 2-3x more high level ore, and with the introduction of T2 gang links exhumer cycle times are much faster.

Industry is notoriously difficult to level up, and not much public information is available regarding details of the system. This report will attempt to answer all questions regarding the nullsec hidden belt system.



The System

The industrial index decays at a rate of 1% per hour (or around 25% per day). The index is increased by the total volume (m3) of mined goods. Mini-profession sites (magnetometric, radar, ladar) do not contribute to the industry rating. The following is a table illustrating the amount of m3 required to be mined to maintain each level:

Index	Mined volume	Volume/day to	Man-hours/day
Level	to obtain (m3)	maintain (m3)	to maintain
1	1,500,000	750,000	3.97
2	3,000,000	1,500,000	7.94
3	6,000,000	3,000,000	15.89
4	12,000,000	6,000,000	31.77
5	24,000,000	12,000,000	63.54

It should be noted that ice mining pulls up roughly half the volume (47.6%) of ore mining. So attempting to raise the index through ore mining is most preferred.

The belts respawn on a 4-day timer. If you drop below the threshold to maintain a belt, it will disappear during the next downtime. The index level of your system at downtime is what determines what will spawn. Server crashes and restarts count as a downtime. Because of the 1% decay an hour a system essentially has a 4-day buffer it can survive while in "free fall". There is also an invisible 4-day buffer above level 5 which cannot be observed via the infrastructure hub.

Mining a hidden belt to extinction will respawn it within 5 minutes if there is no one decloaked still in the belt. The hidden belts must be scanned down using core probes. The larger a belt is the harder it is to scan down. Thus, small asteroid belts are the easiest to find. Belt scan signatures change after every downtime. Every *Ore Prospecting Array* upgrade gets you everything contained by the previous upgrades, plus the current.

Index Level	What you get
1	Small
2	Moderate
3	Large
4	Extra Large
5	Giant

The *Survey Networks* upgrade produces mini-profession sites (hacking, salvaging, analyzing) in radar and magnetometric sites. Survey Networks will NOT produce ladar sites (gas clouds), or true gravimetric sites. These sites will spawn sporadically, and are independent of anything else). The mini-profession sites are not gated, and thus rorquals can fly into them to clear out NPCs. Having a higher industry rating unlocks more challenging sites and increases spawn rates. Completing these sites will not contribute to the industry rating of the system.

Perfect Miner Income

These are calculated with perfect skills, perfect Rorqual boosts, and T2 equipment, a single 5% yield implant, and no drones. Skiffs are used only for mining mercoxit, mackinaws only for ice, and hulks only for ore. The yields have increased by 14.6% due to the new tech 2 mining gang links. Once again this makes mining easier than it was at the launch of Dominion (24.3% higher yield now than then). These numbers are used throughout the rest of the report as means of estimating per profits/hr and man-hours required.

	Yield/cycle	Cycle time	Yield/hr	Volume/hr
Skiff	82	104.06	2475.5	113,473
Mackinaw	4	159.89	78.59	90,061
Hulk	5459m3	104.06	164,800m3	188,856

Now the relative profit rates mining each ore type assuming perfect refine:

Ore	ISK/hr
Mercoxit	77,072,309
Arkonor	68,360,126
Crokite	55,792,722
Bistot	55,331,393
Hemorphite	54,053,480
Hedbergite	51,691,012
Jaspet	49,868,107
Dark Ochre	45,384,561
Pyroxeres	39,580,451
Veldspar	34,028,185
Scordite	29,906,994
Kernite	29,179,105
Plagioclase	29,037,385
Gneiss	25,488,441
Spodumain	19,547,113
Omber	18,322,221

(May 3rd 2012 prices)

Now we'll get into what each hidden belt contains, and what strategies you should use when mining them...

Small Asteroid Cluster

The small asteroid cluster is your first real foothold into the world of industry development. Up until this point you had to mine lots of small time asteroids that typically evaporated seconds into your cycle, leading to vast inefficiency, annoyance, and the need to move within range of new asteroids. The small asteroid cluster contains the single largest asteroid in the game, The Spod! The Spod is a whopping 4,000,000m3, at 250,000 units. It takes 21 man-hours to mine this guy out, and doing so is enough to push a fresh level 1 system up into level 2. The entire belt is centered around The Spod.

The small belt is dispersed just enough to make you move 3-4 times if you're mining it out completely. The combined total wealth contained in the small belt is 1.341bil, at 8.01mil m3, and takes 42.4 man-hours to mine. If you mine the small belt to completion you'll be halfway through level 2.

Average income in this belt is 31.6mil/hr per perfect miner. Cherry picking (mining ABCM – arkonor, bistot, crokite, mercoxit) potential in this belt is 374mil, taking 6.3 man-hours at an average profit of 59mil/hr.

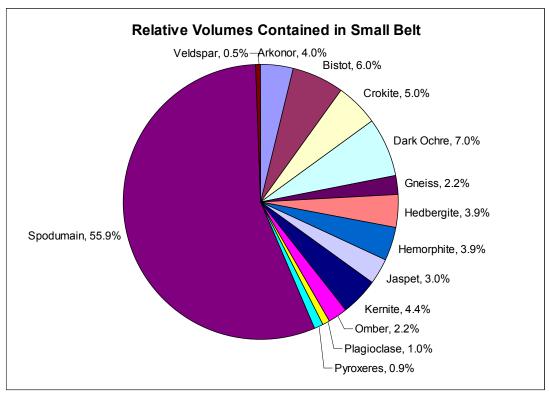


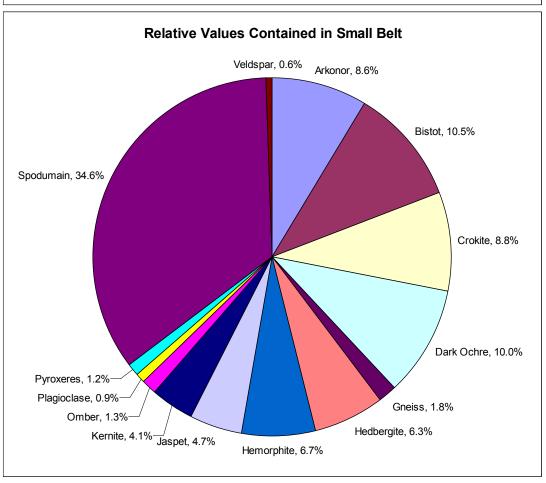
Figure 1: The Spod. It blots out the sun (sun blotting not illustrated).

Ore	Amount	Asteroids
Arkonor	20,000	4
Bistot	30,000	4
Crokite	25,000	2
Dark Ochre	70,000	2
Gneiss	35,000	1
Hedbergite	103,000	5
Hemorphite	104,000	8
Jaspet	120,000	5
Kernite	295,000	6
Mercoxit	0	0
Omber	300,000	5
Plagioclase	230,000	4
Pyroxeres	250,000	4
Scordite	0	0
Spodumain	280,000	2
Veldspar	438,000	5



Figure 2: Always be sure to bring proper protection. Hulks may be strong against rats, but players can scan you down in under a minute, and seconds if you have a large hauling ship (orca/rorqual).





Moderate Asteroid Cluster

The moderate belt is fairly dispersed with an even spread of ores. If you're a T2 miner (which you should be), then you'll be swapping out crystals often in here, and be forced to move often (6+ times). The belt is an arc about 180km across. The moderate belt is not worth mining to completion, it should only be cherry picked. The ABCM represents 29% of the volume, and 50% of the value. This is the first belt you'll encounter with mercoxit. Mercoxit mining is HIGHLY inefficient with anything but a properly skilled skiff with mining crystals (and I mean that).

This marks the beginning of the ABCM insanity that came with the recent stealth buff. There is now a whopping 350% more crokite than before. CCP also added a 150k spodumain asteroid to the belt, dramatically increasing the volume/time wasted in this belt. This belt is worth 1.7bil and has a volume of 8.47mil m3, taking 46.2 man-hours to mine out. The average income is 36.8mil/hr per miner, which is slightly higher than the small belt. Cherry picking potential is worth 803mil, taking 14.5hrs at a rate of 55.2mil/hr.

If you do feel compelled to mine the medium, all the valuable ores are near the core and accessible without moving. The proper positioning for mining is illustrated below in figure 3 (note the dense cluster of asteroids within your laser range). The outlying asteroids are light weights such as veldspar and scordite, a single roaming miner can consume them in decent time.

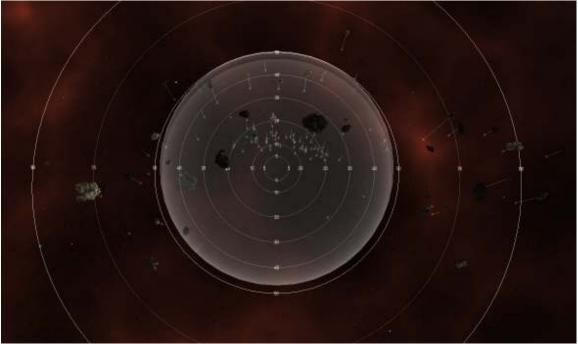


Figure 3: An overhead view of the medium belt.

Ore	Amount	Asteroids
Arkonor	25,000	2
Bistot	35,000	4
Crokite	70,000	2
Dark Ochre	40,000	4
Gneiss	45,000	4
Hedbergite	100,000	4
Hemorphite	100,000	4
Jaspet	120,000	4
Kernite	400,000	11
Mercoxit	10,000	1
Omber	400,000	11
Plagioclase	925,000	11
Pyroxeres	965,000	11
Scordite	940,000	13
Spodumain	190,000	5
Veldspar	865,000	13

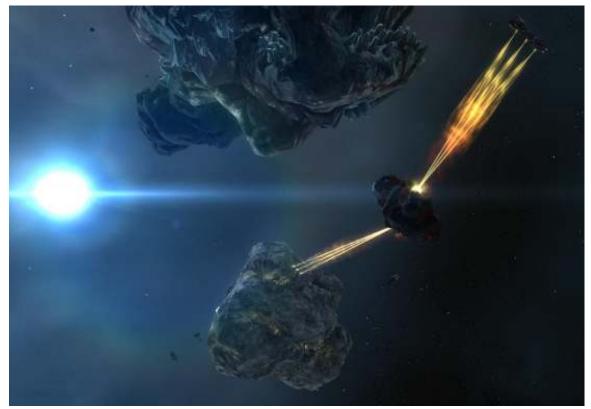


Figure 4: Cherry pickers consuming an arkonor asteroid.

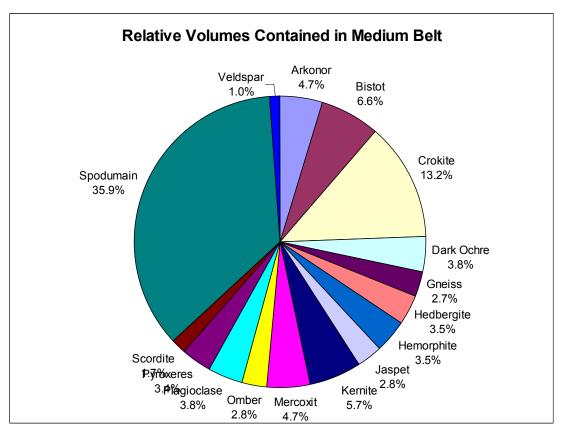


Figure 5: The moderate belt has a new massive spodumain asteroid, which we hate.

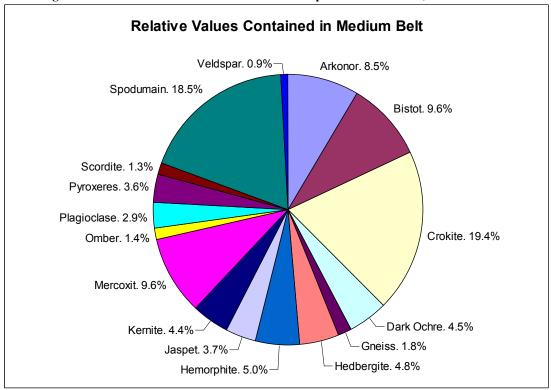


Figure 6: The value of ABCM is worth half the belt, while representing only 29% of the volume. Cherry pick this belt for the valuable ores and then move on.

Large Asteroid Cluster

If you learn anything from this report, learn this. The large asteroid belt (level 3) is the most value asteroid belt you have. The large asteroid belt is completely minable from only two warp-in spots, which eliminates the need for movement. There are only a handful of asteroids, but each is very large, which makes mining them much easier as well. The belt itself is centered on a few white space coral type things which can and will bounce your hauler if you warp in too close to them. The mercoxit patch is close to one of the warp-in spots, so steer clear of that when setting up.

This belt has increased in size by 38.6%—but ONLY because of massive increases in arkonor and bistot. The current size is 7.465mil m3, and takes 40.9 man-hours to complete. However, the average profit per miner is the highest of any belt, at 40.9mil/hr. This belt contains a whopping 60.1% ABCM by volume, which is the highest of any belt. The total belt is worth 1.95bil. It is easily the most profitable belt to mine to completion repeatedly.

The cherry picking potential of this belt is 1.43bil, taking 25.1hrs, at 57mil/hr. But to be honest, you'd be mining 60% of the belt at this point, and you should just cycle it and repeat the process infinitely.



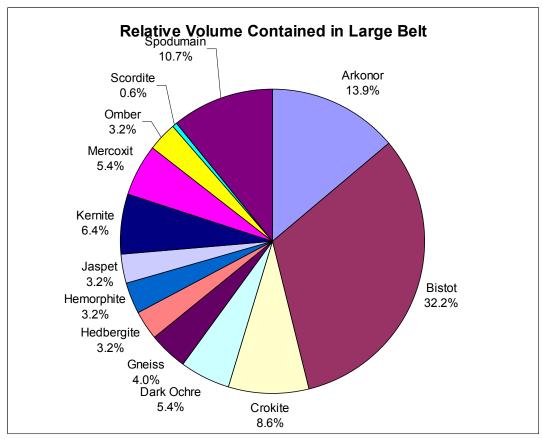
Figure 7: A group of miners can reach the entire belt from two spots, making this a very pleasant mining experience. Haulers beware the white coral formations, you'll bounce off them.

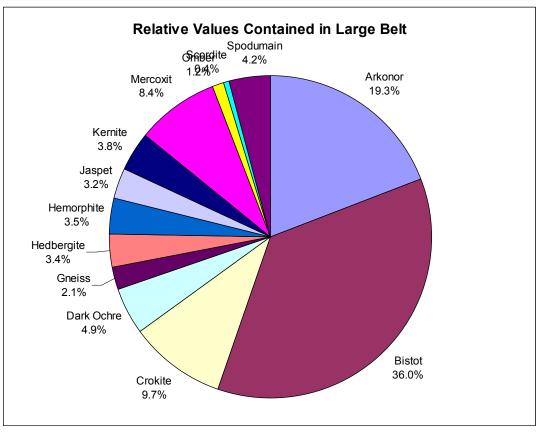
Ore	Amount	Asteroids
Arkonor	65,000	1
Bistot	150,000	1
Crokite	40,000	1
Dark Ochre	50,000	1
Gneiss	60,000	1
Hedbergite	80,000	1
Hemorphite	80,000	1
Jaspet	120,000	1
Kernite	400,000	4
Mercoxit	10,000	1
Omber	400,000	3
Plagioclase	0	0
Pyroxeres	0	0
Scordite	300,000	2
Spodumain	50,000	1
Veldspar	0	0

This distribution demonstrates how concisely packed the asteroids are. Most occurrences are only in one asteroid, of a size slightly larger than the other belts.



Figure 8: Dantooine is too remote to make an effective demonstration. You may fire when ready.





Extra Large Asteroid Cluster

The extra large asteroid belt is composed like the moderate belt, but only 120km long. As can be seen below from the asteroid counts, it contains lots of small and mid-sized asteroids, which will leave you shifting targets often.

The extra large is 16.5mil m3 which is twice the size of the medium and large belt. Taking 93.6 man-hours to mine, this is truly an extra large belt. It's worth 4.12bil with an average income of 44.1mil/hr. Cherry picking is worth 2.71bil, taking 50.6 man-hours at a rate of 53.5mil/hr.

I was originally a strong critic of using this belt for anything but cherry picking because of its size, but 90% the weight of the belt is accessible from one spot. Sitting at the core of the belt and mining everything with an income rate of jaspet or higher will give you countless hours with minimal target shifting. By using this strategy you'd get 63.52 man-hours of mining and earn 3.38bil at a rate of 53.2mil/hr. This would not cycle the belt, but it would eat 53% of it, and all the valuable ore. Mining the other half of the belt would only earn 24.6mil/hr, and would take 30.1 man-hours.

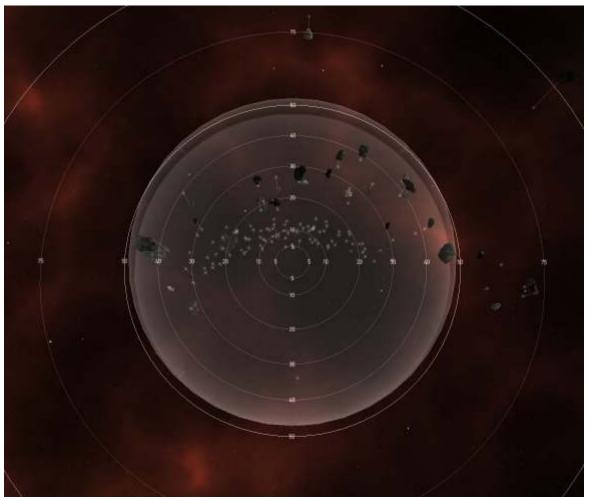
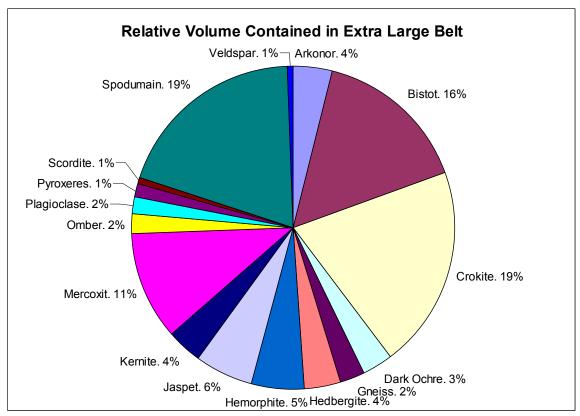


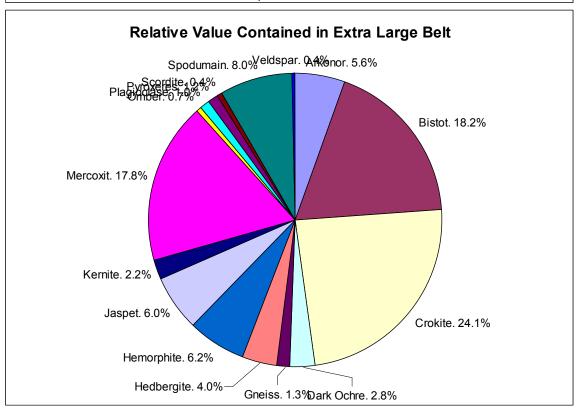
Figure 9: An overhead view of the extra large belt.

Ore	Amount	Asteroids
Arkonor	40,000	4
Bistot	160,000	5
Crokite	210,000	5
Dark Ochre	60,000	5
Gneiss	80,000	6
Hedbergite	200,000	7
Hemorphite	300,000	10
Jaspet	470,000	11
Kernite	500,000	12
Mercoxit	45,000	2
Omber	500,000	13
Plagioclase	780,000	12
Pyroxeres	805,000	11
Scordite	660,000	8
Spodumain	200,000	8
Veldspar	840,500	11



Figure 10: Mining is typically done broad spectrum with the miners to persist as long as possible in one spot before moving on.





Giant Asteroid Cluster

Welcome to level 5, you now cannot even maintain your system with three non-stop miners working 23hrs a day. You now have the giant asteroid belt, and it's a monstrosity. The giant belt is very vertical and spread out. Each asteroid is very large which means it'll take a long time before you have to move to another target. And I say move to another target because the asteroids are not situated well for any individual mining spot (20+ km between them).

The entire belt is 16.92mil m3, making it the largest hidden belt in the game. It takes 96 man-hours from perfect miners to mine it completely. The total value is 4.36bil, yielding income of 45.4mil/hr per miner. The ABCM ores compose 51.7% of the volume, and 67% the value. Cherry picking yields 2.9bil, takes 52.7hrs, and earns 55.3mil/hr. Mining this belt repeatedly is almost as good as the large belt (95% the rate) which may end up being better overall because you have to scan it down half as often – since it takes twice as long to mine out.

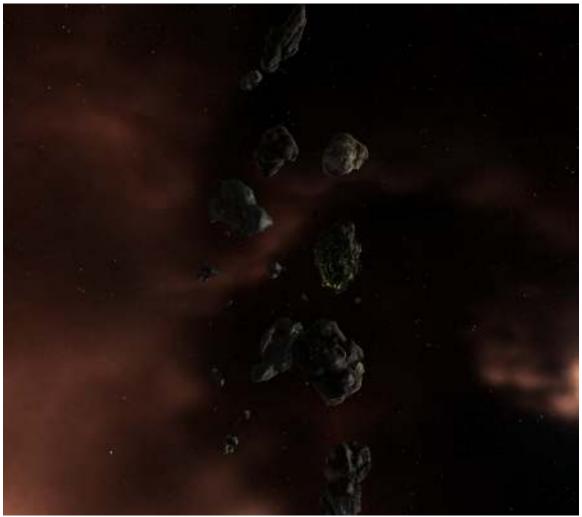
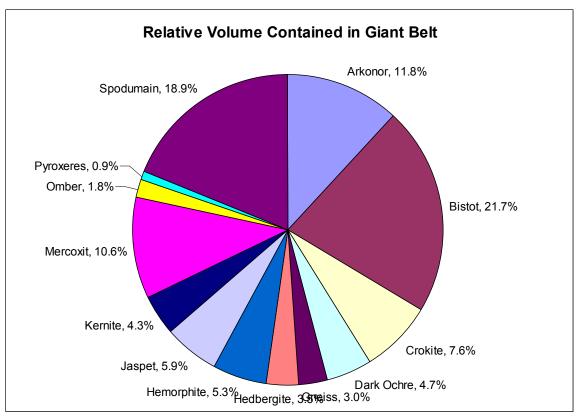


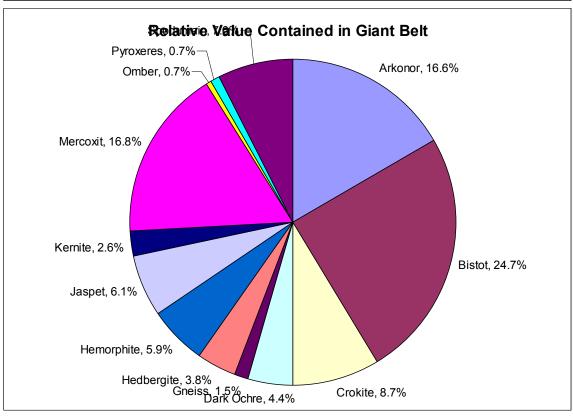
Figure 11: The giant belt is very tall (200-250km)

Ore	Amount	Asteroids
Arkonor	125,000	2
Bistot	160,000	2
Crokite	80,000	1
Dark Ochre	100,000	1
Gneiss	100,000	1
Hedbergite	200,000	2
Hemorphite	300,000	3
Jaspet	500,000	4
Kernite	600,000	4
Mercoxit	45,000	2
Omber	500,000	3
Plagioclase	0	0
Pyroxeres	480,000	6
Scordite	0	0
Spodumain	200,000	1
Veldspar	0	0



Figure 12: The giant belt requires a good deal of maneuvering and moving to get between asteroids. If you're a multiboxer it's a good idea to set your fleet of miners to "approach" the jetcan, and use a tractor beam on your hauler to drag the can around. Then lead your pack of miners around the belt by dragging the jetcan behind your hauler.





Belt Comparison

We've pulled all the data from each belt together for quick comparison. It's amusing to note that the moderate and large belts are smaller than the small. The Large Asteroid Belt has the highest percentage of ABCM, which gives it the highest average income rate if mined repeatedly.

	Vol (m3)	Time	Value (mil)	Income (mil/hr)	Percent ABCM
Small	8,009,300	42.41	1,342	31.64	14.98%
Moderate	8,465,750	46.23	1,702	36.81	29.29%
Large	7,465,000	40.93	1,954	47.73	60.01%
xLarge	16,477,550	93.58	4,124	44.1	50.74%
Giant	16,924,000	95.94	4,362	45.46	51.76%

Table 1: This table compares belt size(volume in m3), man-hours required to mine it (time), total value of the belt, average income rate, and what percent of the belt is poachable.

This is all well and good you say, but I'm a poacher, and I want to cherry pick all the ABCM without wasting time mining anything else. The following chart is for you:

	Vol (m3)	Time	Value (mil)	Income (mil/hr)
Small	1,200,000	6.3	374.6	58.96
Moderate	2,480,000	14.5	803.0	55.23
Large	4,480,000	25.1	1,431.9	56.98
xLarge	8,360,000	50.6	2,708.9	53.54
Giant	8,760,000	52.7	2,914.8	55.29

Table 2: This table compares the poaching potential of each belt, for consuming only arkonor, bistot, crokite, and mercoxit.

Now this is a perfect time to point out that mining only the ABCM is not enough to maintain the industry standing. Note that the belts are on a four day respawn timer, thus you only mine the cumulative volumes as noted above in Table 2. Below is a table of how sustainable each level is through only cherry picking. If you only wish to do cherry picking, then a level 3 or level 4 system is ideal.

	Volume	Volume/day to	Percent	ABCM	Other
	per day	maintain (m3)	maintained	manhours/day	manhours/day
Small	300,000	750,000	40.0%	1.57	2.38
Moderate	920,000	1,500,000	61.3%	5.22	3.07
Large	2,040,000	3,000,000	68.0%	11.51	5.08
Extra Large	4,130,000	6,000,000	68.8%	24.15	9.91
Giant	6,320,000	12,000,000	52.7%	37.33	30.05

Table 3: This table displays how far cherry picking will be able to maintain the industry standing at each level. Cherry picking man-hours are listed for fast reference, along with the man-hours required to make up the difference to maintain the industry level.

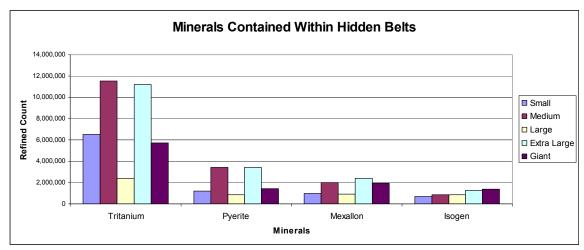


Figure 13: Low end minerals contained within each hidden belt.

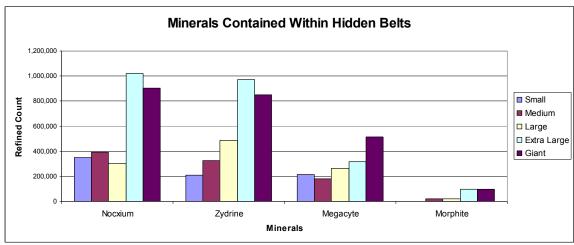


Figure 14: High end minerals contained within each hidden belt.

The hidden belts are good at obtaining high end minerals worth substantial sums. However, they are terrible at obtaining low end minerals such as tritanium and pyerite. This is the great imbalance of hidden belts which limits their usefulness for deep space mining operations. You may be able to mine all the high end minerals you need for construction jobs, but you'll still need to import low end stuff. There is no good way to mine large amounts of low end minerals, especially since veldspar rocks evaporate within a cycle of two of being touched.

Recent Belt Changes

This section will illustrate the recent stealth buffs made to the hidden belts. Most of the belts saw a doubling or tripling of at least some ABCM, which led to massive increases in value and volume.

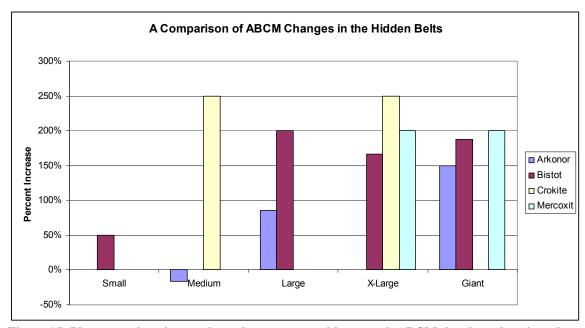


Figure 15: Please note how insane these changes are, and how much ABCM they introduce into the game. The overall intensity of the increase is correlated with belt rank.

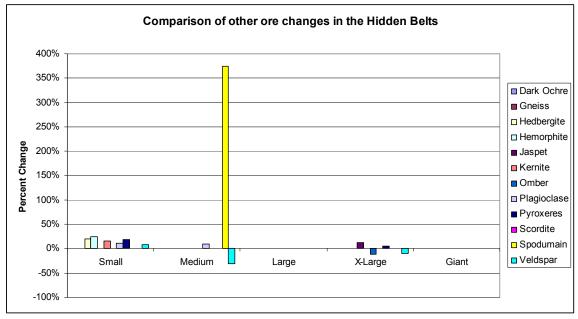
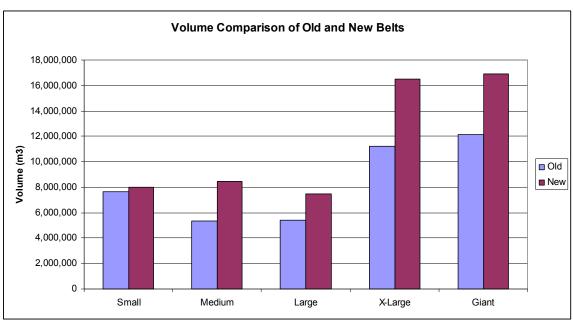
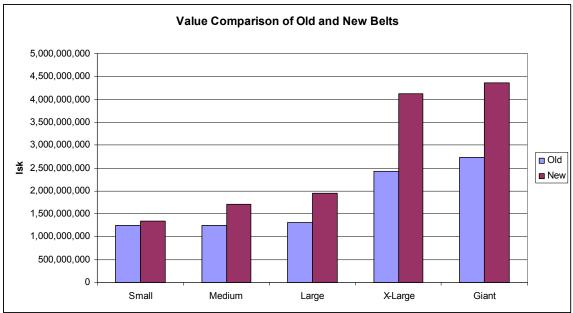


Figure 16: These are all the other ores in the hidden belts. You'll note that for the most part no real changes occurred. The yellow spike is the introduction of a new 150k spodumain asteroid to the medium belt – because such a rock was so popular in the small belt...





Here we can judge how the changes in ore composition have affected the value and volume of each belt. The changes become more pronounced in the higher tier belts, which mostly saw only the doubling and tripling of their ABCM asteroids. ABCM asteroids are notoriously voluminous.

It's unknown what the motivation was to massively increase the high-end ores. Speculators theorize it might have been related to balancing out supply nerfs caused by the upcoming loss of drone loot and possible nerfs to wormhole grav sites. Nullsec still has no good source for mining low-end minerals in bulk.

Mining Strategy

This may sound foolish, since mining is point and shoot, but there are a number of things to take into consideration when setting up mining systems. The size of your corporation and number of regular active miners is obviously the most important. 1-2 miners can easily maintain a level 1 system with regular work, doubling the miner count for each level after that. Finding 32 regular unique miners to maintain a level 5 system is very hard. Most high level systems will be easier maintained by a few multiboxers sporting many accounts each.

Normal:

Maintaining a level 5 system is possible, but not realistically feasible, nor desirable. For ideally mining a level 5 system, you'd want to consume the high end ores (jaspet and higher on the profit rate chart) from the small, moderate, extra, and giant, while cycling the large. At current rates you'd obtain 8.625 billion from the non-large belts every 4 days (23.4mil m3), and 1.953bil for each large you cycle (7.465mil m3). To maintain the required 48mil m3 to maintain level 5 every four days, you'll need to cycle the large belt 3.3 times every 4 days, and completely consume the high end ores out of the others. Doing this to minimally maintain level 5 is the optimal way to milk the system, earning you 15.07bil every four days while taking 294.5 man-hours (73.6hrs/day). This yields 51.2mil/hr for each miner involved.



Figure 17: A high quality view of the Small Asteroid Cluster featuring The Spod.

Hardcore:

Okay, but you don't want to spend as much time AND you still want the profit. So here's what you do... you toggle the system between level 4 and level 5 (or equivalently between level 3/4, 2/3, or even 1/2). Right before downtime you mine a lot and raise the industry level to barely cross into the next level (you'll want a 2-3% buffer), and then the next day go cherry pick the new belt and then stop for the day. By doing this, the system will decay back to the lower level and the higher belt will disappear. The next day you then go around mining the high end ores of the other belts (and cycling the large if applicable), and time it such that you'll be back at the 2-3% buffer right before downtime. Using this strategy you can force valuable belts (such as the giant) to respawn every 2 days without ever mining them to completion.

The ideal situation is to obtain the giant belt, and then wait to decay back into level 4, and then cherry pick the ABCM before downtime. Start the next day at high level 4 and mine like crazy before downtime to reach level 5 again. Eat the ABCM ores out of the small, medium, and extra large belts, and enough of a large belt to reach level 5. The goal should be to only cross into level 5 a few hours before downtime (thus limiting your decay to only 250k m3/hr for 75% of the time, while still getting twice the benefit of the giant belt).

The end result requires only 24-26mil m3 of mined goods every 4 days to balance between level 4 and level 5. Eating the ABCM from the small, medium, and extra large will get you 16.52mil m3 every four days (worth 5.3bil). Cherry picking the giant belt twice every four days will net 17.52mil m3 worth 5.83bil. Because they've double the ABCM in these belts, you can maintain this strategy using ONLY cherry picking which will yield around 34.04mil m3 of ore.

This is the strategy you want to use to cherry pick 100% of the time. It'll take 202.1 man-hours, and net you 11.13bil every 4 days, at 55.1mil/hr per miner. Many Bothans died to bring you this information.

Multi-System:

Great, but I like normal schedules, is there another way to get good income? Yes there is. For the same amount of work of sustaining a level 5 system, you can sustain two level 4 systems. Cherry picking the small, moderate, and extra large, and cycling the large 1.6 times (cycle it once, and cherry pick the respawn) every four days, you'll earn 7.27bil taking 137.55 man-hours at a rate of 52.8mil/hr per system. Since you're doing this in two systems, you're getting 14.54bil for 275.1 hours of work.

Splitting your efforts between two systems decreases the chance that you'll be noticed by enemy forces. So now you're thinking we can continue this pattern of having twice as many systems, at one less industry level to earn more money. Having four level 3 systems requires cycling the large belt 1.6 times in each system every four days (it's actually 1.1 times, but you'd cherry pick the respawn which is 60% of the volume). This

strategy earns 4.56bil per system and takes 87hrs per system (348hrs total). The total yield from having 4 level three systems is 18.25bil every 4 days taking 348hrs. This yields 52.4mil/hr for each miner involved. So the income is the equivalent but the coordination between 4 systems is probably a lot harder.

	Value	Manhours	Rate
Normal	15.07bil	294.5	51.21 mil/hr
Multi-system	14.54bil	275.1	52.8 mil/hr
Hardcore	11.13bil	202.1	55.1 mil/hr

Table 4: Using minimalistic ideal strategy to maximize profit at minimal time use. The numbers are estimated over the four day respawn cycle.

Scaling down to eight level 2 systems however does not earn a higher income (and would be insane to manage). The next section discusses why you do not want a level 5 system.



Figure 18: The large belt is the key to profit mining with the hidden belt system.

Consequences

"WoW.... bunch of filthy carebears..... industry level V..... I guess it might piss ya off to have this system locked down huh?"

Bogels, -A-

The higher your industry rating the more reds will come to visit you. If you have a level 5 system they will permacamp in cloaked vessels all day just to spite you. We've personally created five level 7 systems, and all of them ended up being permacamped until they decayed back to level 3. At any given point, only a handful of solar systems in the galaxy will be level 5 industry, and players will seek you out. If there is a station in your system, you will get twice as many reds. Without a way to conceal the industry standing of your system this is unavoidable, and quickly renders any level 5 systems pointless.

This is why you are much better off maintaining a series of lower level systems, which will not attracted unwanted attention. Level 4 systems are common throughout the game because they are easy to maintain, and reds will not permacamp them. Level 3 systems are ignored entirely. Couple this fact with the increased profit from having many smaller systems - this is obviously the way to go.

You work very hard to obtain your high level industry system, but you inevitably have to go to bed. If you're an American, expect all valuable ores to be poached long before you arrive. Downtime occurs in the middle of the night for Americans and middle of the day for Europeans. This gives a massive advantage to the European player base who can cash in on everyone else's work (earning the cherry picker's salary of 55mil/hr), while the people who actually maintain the system earn far less (around 30mil/hr on average).

Conclusion

The industry index system levels are exponentially larger than the last, making it very difficult to achieve high levels. Recent Rorqual boosts and T2 ganglinks have improved mining yields by ~24.3%, making this the most ideal time in all of Eve's history to create industrial systems. The best hidden belt is the Large Asteroid Cluster at level 3. It offers the best money when mined repeatedly. Maintaining a number of level 3 systems is preferable to fewer level 4 or level 5 systems. Having many level 3 systems offers better yields, and avoids the attention of reds who seek to disrupt your activities. A level 5 system is not likely to be feasible to maintain because afk cloaked campers will occupy your system within days, rendering it too risky to mine in.

Europeans receive the most benefit from the hidden belt system, as all belts respawn during their prime time, leaving them with the most accessibility to the valuable ores. This leaves the American time zones without much profit to be had unless strict regulation is maintained over the system to prevent poachers. On average any given level is supported about 60% by cherry picking, but cherry picking alone will make you decay. The hidden belt system produces high end minerals very readily, but it is all but impossible to obtain tritanium and pyerite in any bulk from them. The time has never been better to go build up your industry index.



Figure 19: Ship your refined minerals carefully. Do not stack freighters with more than 2bil of goods inside or risk being ganked in empire.