

Summary

Year	Turbine	Flare
	CO2 / year	CO2 / year
2026	37,661	18,300
2027	155,192	20,568
2028	154,841	4,502
2029	153,239	4,241
2030	157,214	3,775
2031	156,672	3,953
2032	159,771	4,486
2033	163,912	4,252
2034	161,644	3,907
2035	158,831	3,551
2036	163,037	3,199
2037	160,760	2,846
2038	158,444	2,592
2039	161,937	2,360
2040	161,266	2,119
2041	154,758	1,957
2042	155,029	1,770
2043	153,127	1,601
2044	151,483	1,466
2045	154,404	1,330
2046	152,998	1,221
2047	149,972	1,093
2048	155,328	1,006
2049	154,165	942
2050	151,747	876
2051	104,931	554
Total	3,902,365	98,467

Table 9-5	3,999,782	81,956	From ES/2022/001
-----------	-----------	--------	------------------

Emissions Calculation - Turbine

No Power from Shore

[illegible]

Oil production

[illegible]

Offloading El.consumption (avg)

Offloading el.consumption (incl additional thruster & aux.)	kW	3433	capacity offloading	103350	5m3	(1 day with ramping up and down)																					
Offloading flowrate	m3/hr	4500		duration	23		hours																				
Specific Offloading el.consumption	kJ/m3 oil	2746																									
Number of offloading days	days/year	6	32	35	33	30	31	33	32	29	26	24	21	19	17	16	15	13	12	11	10	10	9	8	8	7	7

El. Consumption (exl. heat)[illegible]

Gas Turbine (without offloading)

[illegible]

Gas Turbine (with offloading)

[illegible]

Gas Turbine (no production) - assuming fuel gas

[illegible]

FUEL (without offloading)

[illegible]

FUEL (with offloading)

LHV mass basis (stream 4504)	kJ/kg																		
LHV mass basis	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784	48784
	kJ/Sm3																		
Fuel consumption - Normal & Offloading	6277	6951	7001	7038	7047	7102	7299	7312	7299	7263	7245	7246	7233	7204	7233	7060	6909	6908	6908
Fuel consumption - Normal & Offloading	6686	8511	8502	8618	8629	8696	8937	8954	8936	8893	8871	8872	8857	8821	8857	8645	8460	8459	8459
																	6887	6883	6887
																	8437	8455	8397
																	8430	8501	8493
																	6934	6933	6868

FUEL (production offline) - assuming fuel gas for fuel

[illegible]

CO2 Emission (without offloading)

CO2 emission from gas turbines - Normal	tonnes/day	326	439	442	445	445	449	462	463	462	460	459	459	458	456	458	446	436	436	436	434	436	432	435	438	438	433
---	------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

CO2 Emission (with offloading)

CO2 emission from gas turbines - Normal & Offloading	tonnes/day	422	467	470	473	474	477	491	491	490	488	487	487	486	484	486	475	464	464	464	463	464	461	463	467	466	462
--	------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

CO2 Emission (no production) - assuming fuel gas for power

[illegible]

Uptime	%	96.4%	96.3%	95.1%	93.8%	96.2%	95.1%	93.9%	96.4%	95.4%	94.2%	96.7%	95.7%	94.5%	97.0%	96.0%	94.8%	97.2%	96.0%	94.8%	97.5%	96.0%	94.9%	97.5%			
Uptime	114	352	348	342	351	347	344	352	348	344	354	349	345	354	351	346	355	351	347	355	351	346	357	351	346	242	
Offline time	4	13	13	23	14	18	22	13	17	21	12	16	20	11	15	19	10	14	19	10	14	9	14	19	5		
Yearly fuel gas consumption	BOE	103580	426833	425867	421464	432395	430906	439427	450816	444578	436843	448412	442147	435778	445386	443540	425642	426387	421156	416632	424667	424000	412478	427209	424009	41730	
Yearly gas export	BOE																										
Annual production of barrel oil equivalent	BOE/year																										
Annual CO2 emission - Normal & Offloading (Average) (incl. uptime)	tonnes/year	37661	155192	154841	153239	157214	156672	159771	163912	161644	158831	163037	160760	158444	161937	161266	154758	155029	153127	151483	154404	152998	149972	155328	151465	151747	104931
CO2 footprint from gas turbines - Normal & Offloading (Average)	kg CO2/BOE	29	7	6	7	7	7	7	7	8	8	10	11	12	13	15	15	17	18	20	22	24	26	29	31	33	24

CO2 Emission (original case)

Annual CO2 emission - Normal & Offloading (Average) (incl. uptime)	tonnes/year	38586	138737	138937	159462	163569	162922	165866	170141	167797	164910	169293	166916	164522	168182	167440	160943	136857	135106	133586	135952	134817	131846	136619	135883	133640	92342
--	-------------	-------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	-------

Check Diesel Generation

Diesel Density	tonnes/sm ³	0.855	Note - check added to calculation to confirm sufficient diesel has been included for power generation purposes to cover periods when production offline and fuel gas is not being used for power generation (i.e. during a facility maintenance shutdown or following a production trip). Turbine efficiency taken from Solar performance prediction (PJ5-04-R-80-DS-01002-001). Offline Time = Annual days - Uptime Days. Offline time accounts for planned shutdowns and unplanned production outages. Calculation shows power generation capability from diesel well in excess of demand from diesel
Annual Usage	kSm ³ /year	3,947	
	tonnes/year	3,375	
Diesel LHV	MJ/kg	43	
Turbine Efficiency		0.283	
Annual Power Output	MJ	40,827,783	
	MWh	11,341	

[illegible]

Accumulated Oil production	kBOE
Accumulated CO2 emission	tonnes
CO2 emission per barrel oil equivalent	kg CO2 /BOE

Field Start date		05/09/2026	(included to give uptime days for first and last year of production)																									
Field End date		05/09/2051																										
Number of production days in first year		118																										
Number of days in year		365	365	366	365	365	365	366	365	365	365	366	365	365	366	365	365	366	365	365	366	365	365	365	366	365	365	247

Emissions Calculation – Flare

Days / Year				Produced Gas	Flared Gas	Flaring	Flared Gas /	Flare Gas	Comment
	Year	Start date	End date	Sm3/sd	kSm3	Tonnes CO2	Produced Gas	Tonnes/day	
		Commissioning - Non reservoir gas flared (WOSPS)			2,449	5,602			Aligned with non-reservoir gas in short term flare consent estimate
118	1	05/09/2026	01/01/2027		5,551	12,698		38.43	Short term flare consent estimate plus margin
365	2	01/01/2027	01/01/2028		8,991	20,568		20.13	Higher flare in year 1 due to expected production trips
366	3	01/01/2028	01/01/2029		1,968	4,502		4.39	Annual estimate 0.35% produced gas per year
365	4	01/01/2029	01/01/2030		1,854	4,241		4.15	
365	5	01/01/2030	01/01/2031		1,650	3,775		3.69	
365	6	01/01/2031	01/01/2032		1,728	3,953		3.87	
366	7	01/01/2032	01/01/2033		1,961	4,486		4.38	
365	8	01/01/2033	01/01/2034		1,859	4,252		4.16	
365	9	01/01/2034	01/01/2035		1,708	3,907		3.82	
365	10	01/01/2035	01/01/2036		1,552	3,551		3.47	
366	11	01/01/2036	01/01/2037		1,399	3,199		3.12	
365	12	01/01/2037	01/01/2038		1,244	2,846		2.78	
365	13	01/01/2038	01/01/2039		1,133	2,592		2.54	
365	14	01/01/2039	01/01/2040		1,032	2,360		2.31	
366	15	01/01/2040	01/01/2041		926	2,119		2.07	
365	16	01/01/2041	01/01/2042		856	1,957		1.91	
365	17	01/01/2042	01/01/2043		774	1,770		1.73	
365	18	01/01/2043	01/01/2044		700	1,601		1.57	
366	19	01/01/2044	01/01/2045		641	1,466		1.43	
365	20	01/01/2045	01/01/2046		582	1,330		1.30	
365	21	01/01/2046	01/01/2047		534	1,221		1.19	
365	22	01/01/2047	01/01/2048		478	1,093		1.07	
366	23	01/01/2048	01/01/2049		440	1,006		0.98	
365	24	01/01/2049	01/01/2050		412	942		0.92	
365	25	01/01/2050	01/01/2051		383	876		0.86	
247	26	01/01/2051	05/09/2051		242	554		0.80	
Total					43,044	98,467			

Note - Flaring activity level aligned with FDP and original ES flare volume. Emissions factor corrected.