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Iride and Samaria II Battery Optimization, Vapor Reduction

Methane Recovery

April 2006

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Objective

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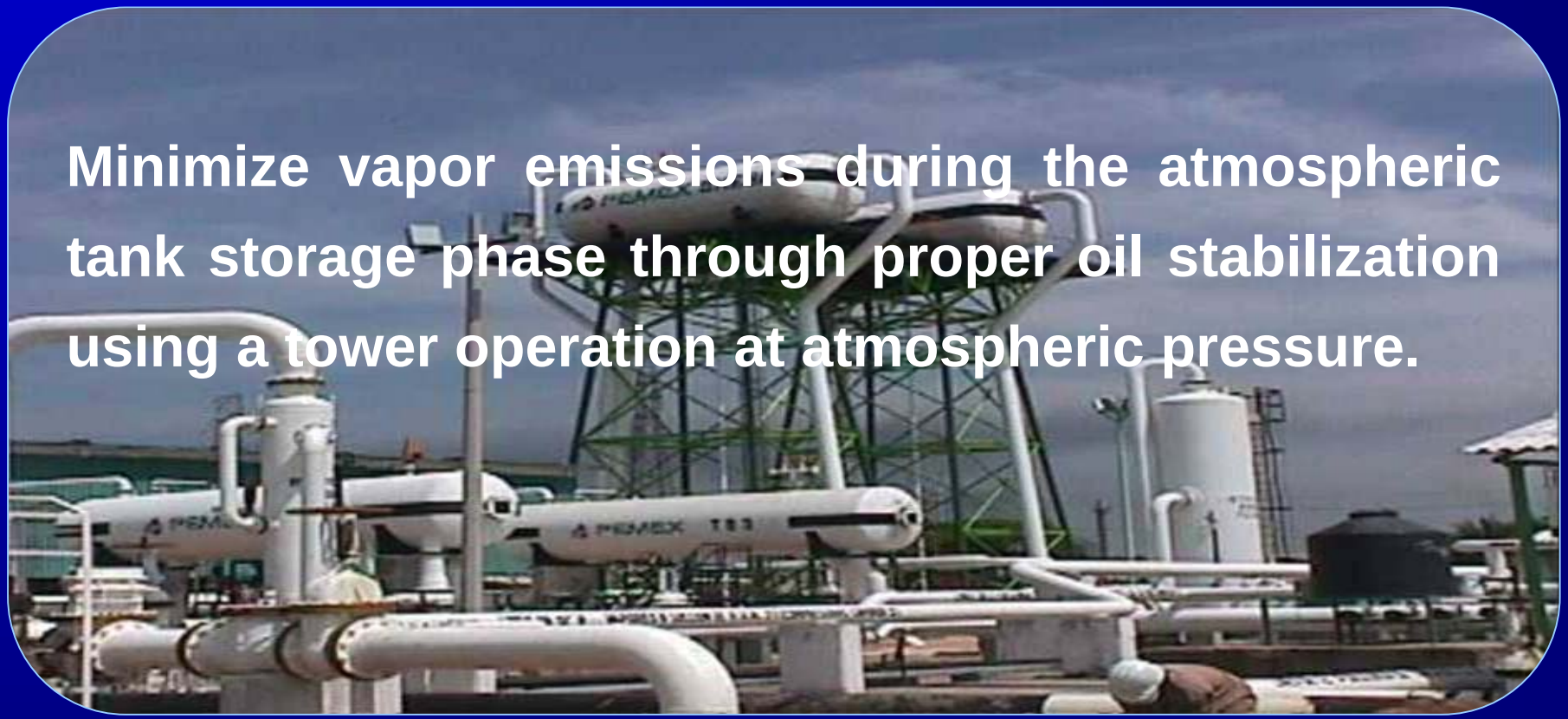
Objective



Minimize vapor emissions during the atmospheric tank storage phase through proper oil stabilization using a tower operation at atmospheric pressure.

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Project

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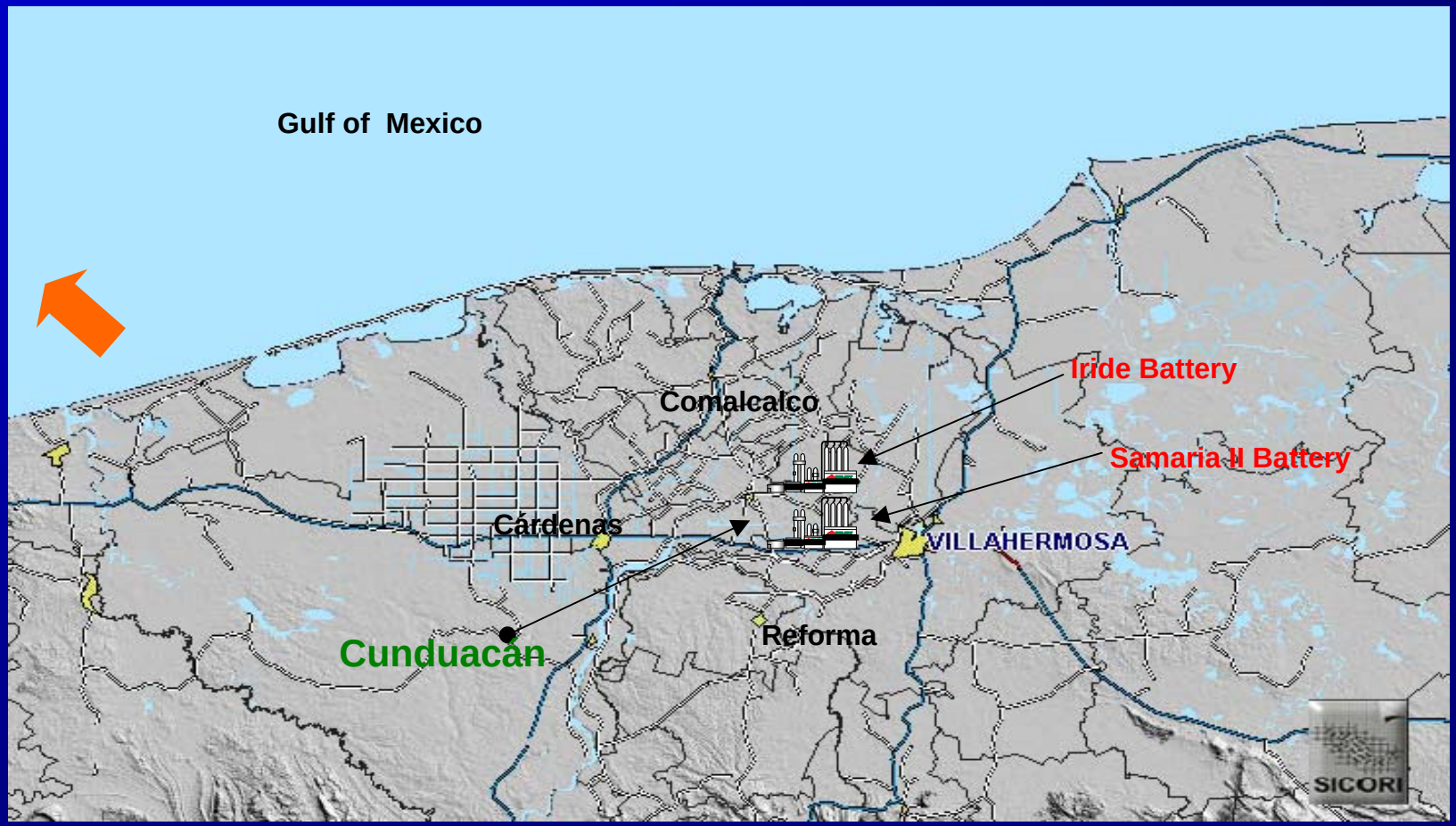
Location



The Iride battery is located in the Municipality of Cunduacán, on the Santa Isabel, Los Cedros, Dos Ceibas and Gregorio Méndez common land area, in the same Municipality, in the State of Tabasco. The Samaria II battery is located at the Ranchería Cumuapa in the Municipality of Cunduacán, State of Tabasco, 17 kilometers west of the City of Villahermosa.

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Current Situation

The project involves substituting the conventional separation process using a tank elevated by a crude plate stabilizing tower in order to optimize the separation process and minimize vapor emissions in atmospheric storage tanks.

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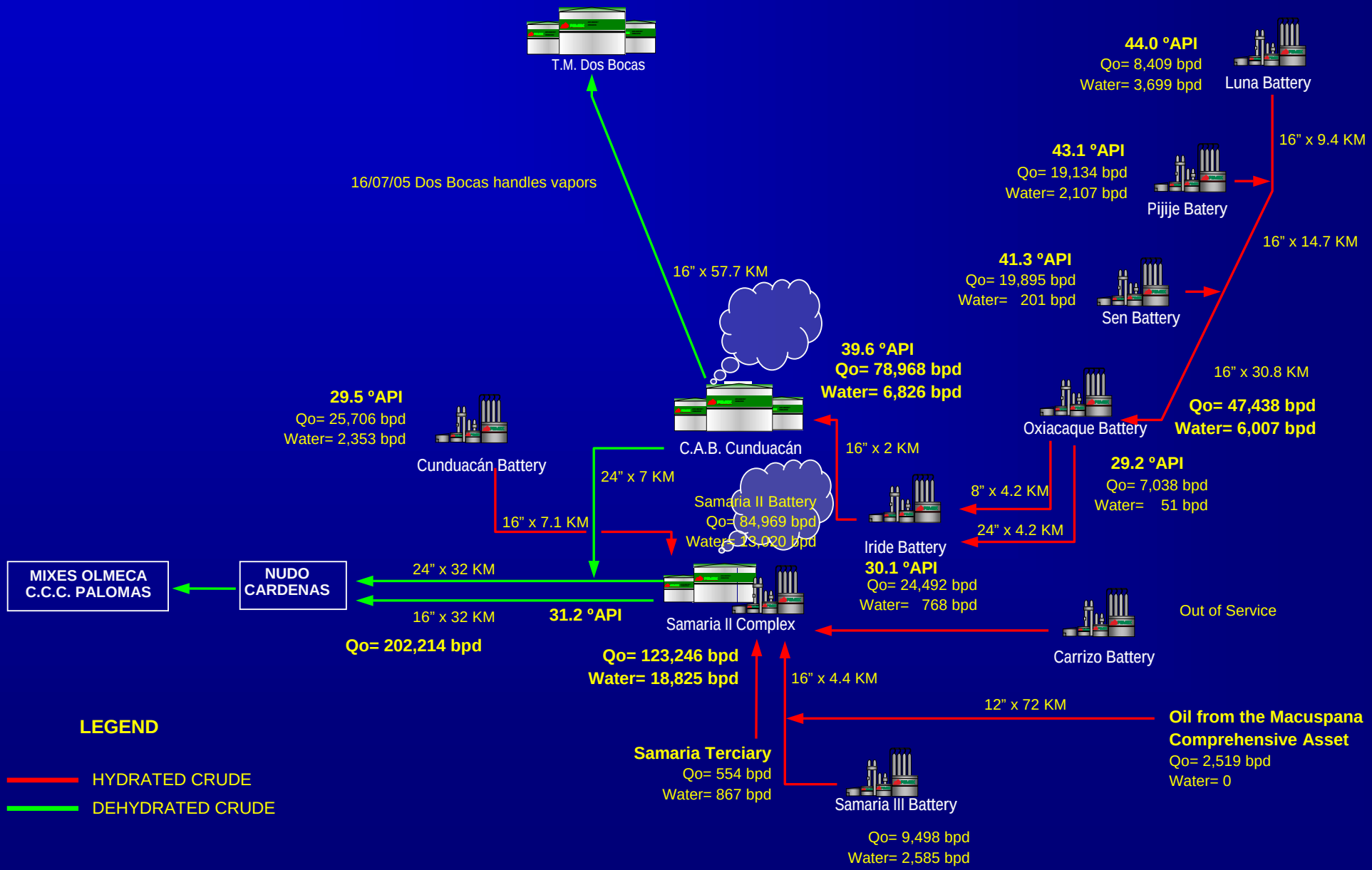
Current Situation



Current Process With An Iride Battery

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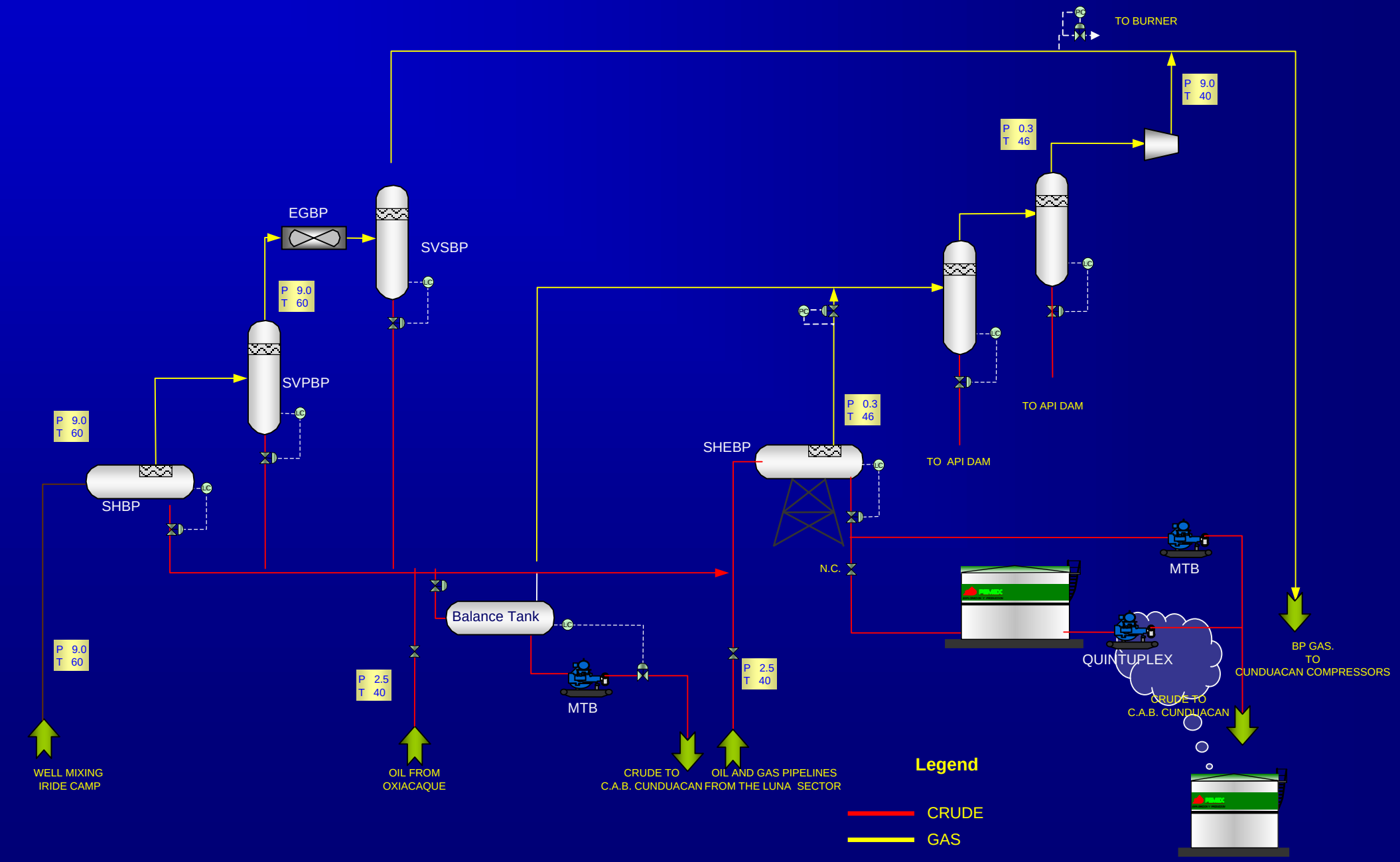

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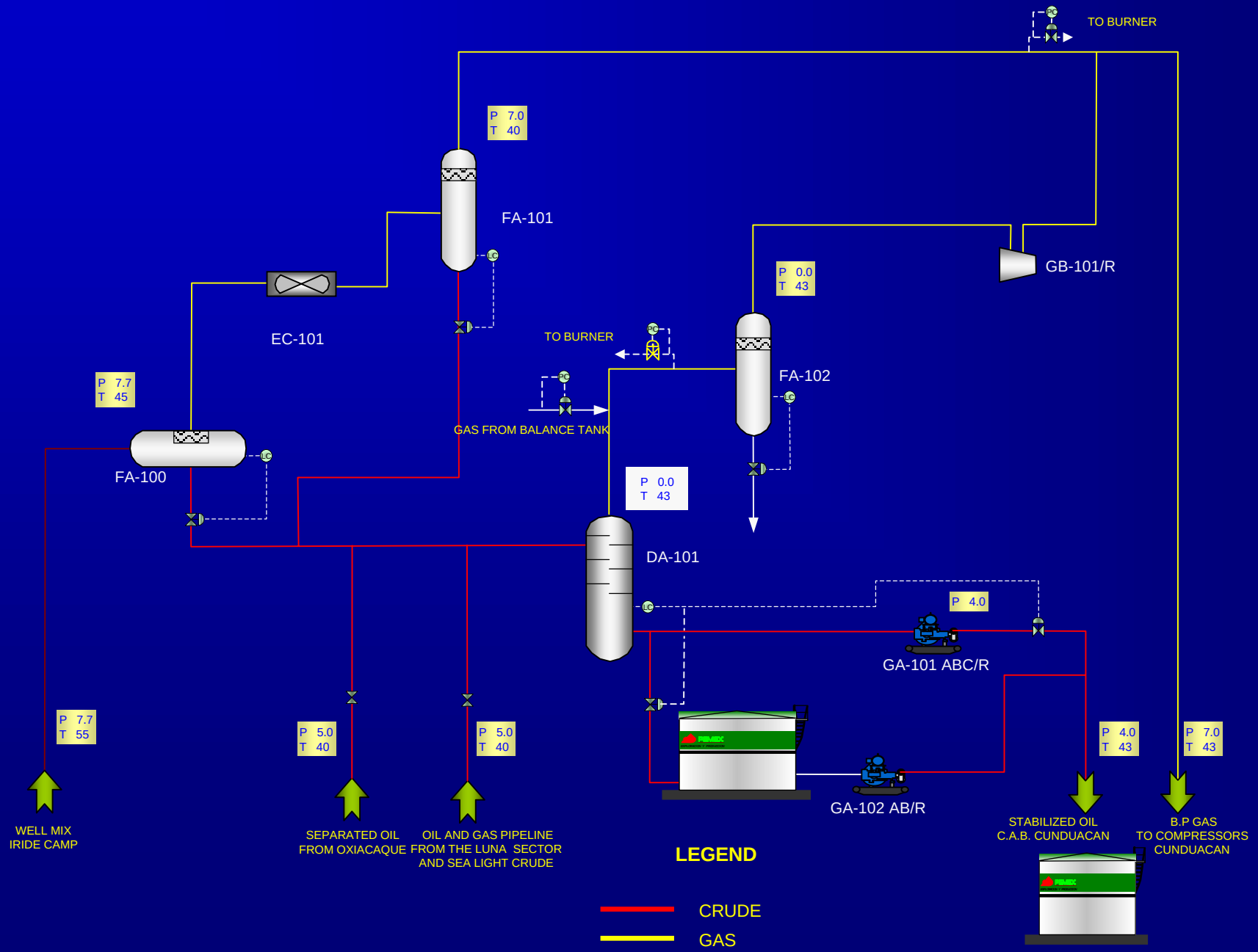
Proposed Process With An Iride Battery



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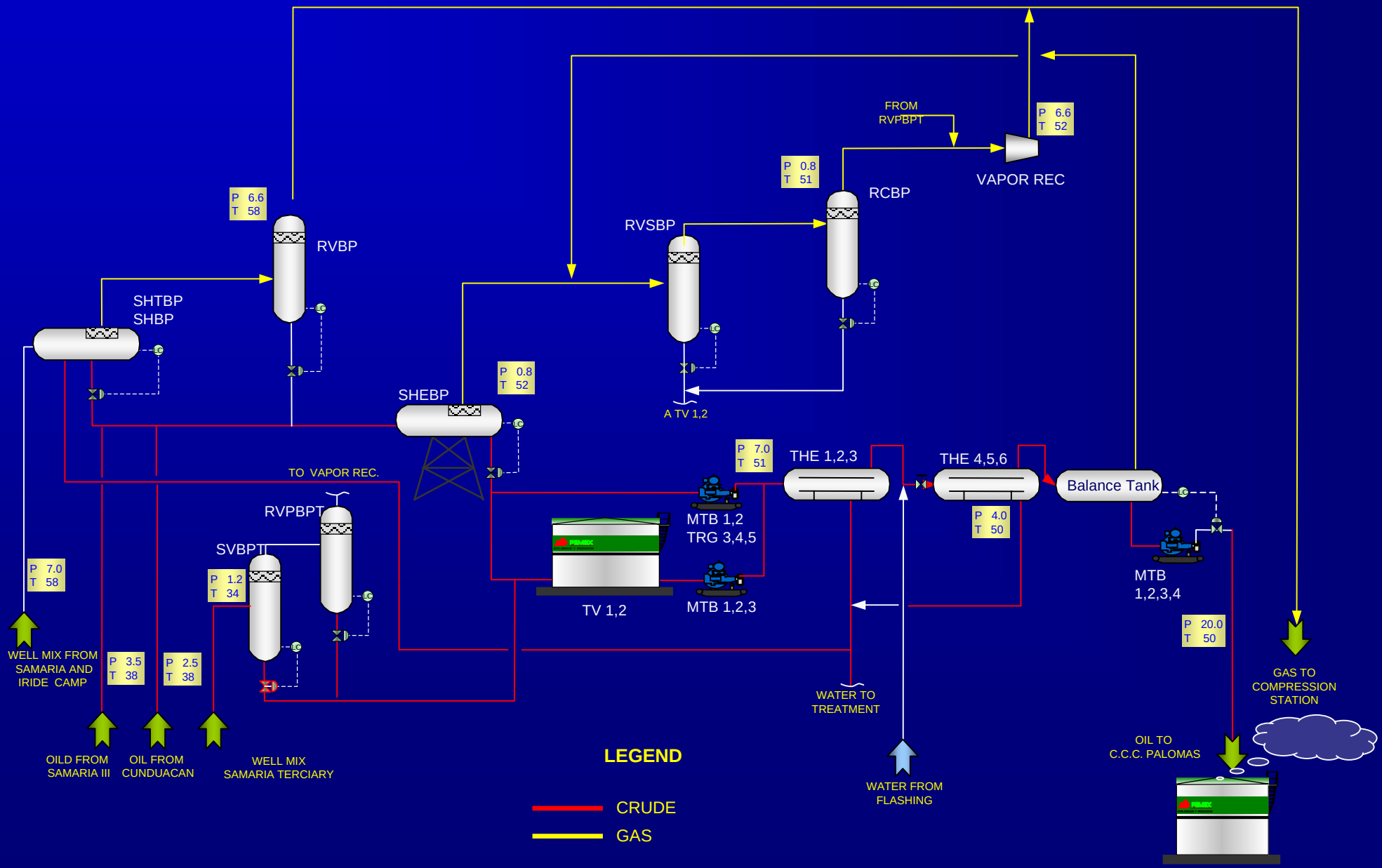
Current Process With A Samaria II Battery



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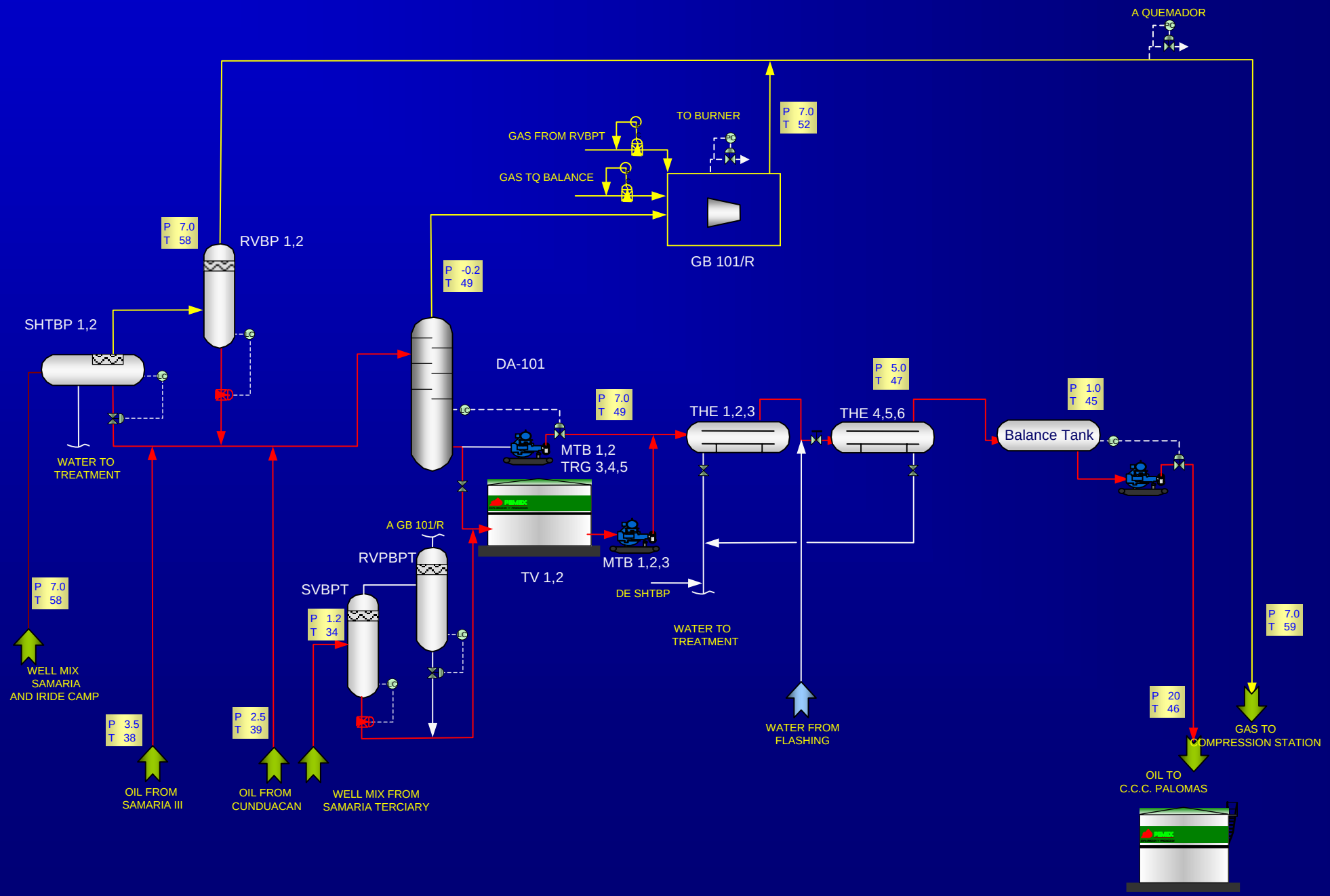
Proposed Process With A Samaria II Battery



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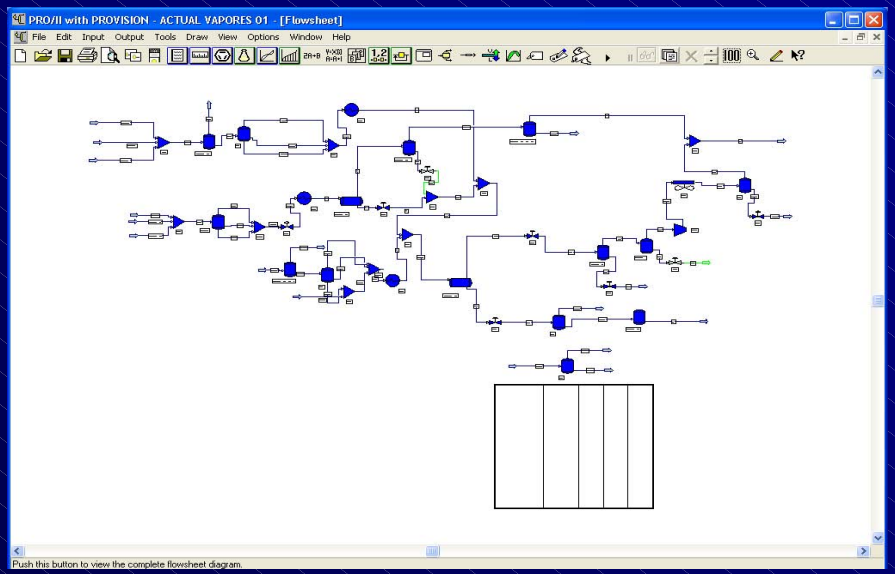
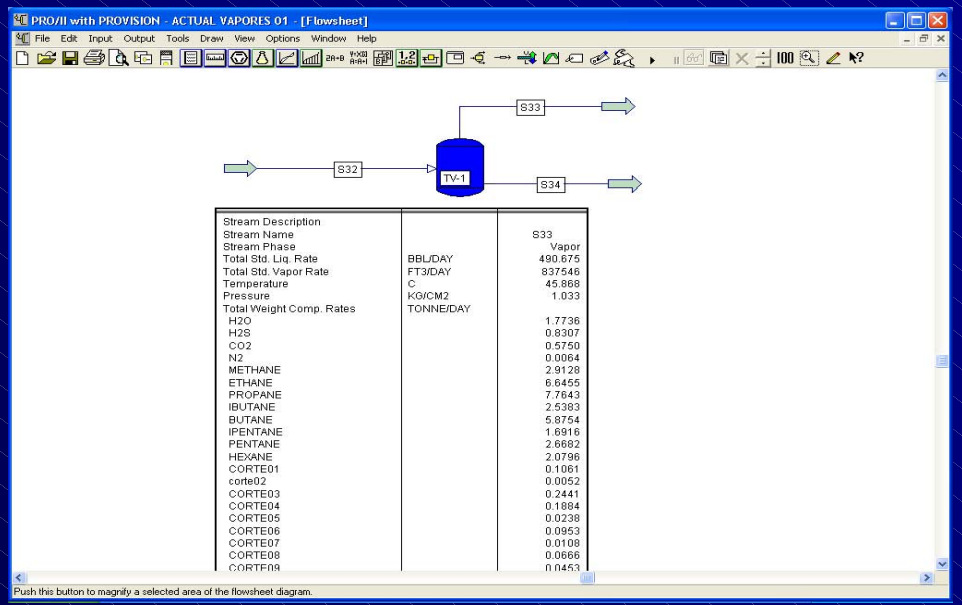
Estimated CH_4 Volume



To determine the amount of carbon, the current vapor emission volume and composition was calculated using the Pro II simulator.

In order to get the amount of vapor emissions in the tanks, during simulations were considered the following:

- The maximum pressure status in the elevated separator and in the tower
- Maximum operation pressure in crude stabilization
- Mix separation efficiency during gas and liquid phases



Stream Description		
Stream Name		S33
Stream Phase		Vapor
Total Std. Liq. Rate	BBL/DAY	490.675
Total Std. Vapor Rate	FT3/DAY	837546
Temperature	C	45.868
Pressure	KG/CM2	1.033
Total Weight Comp. Rates	TONNE/DAY	
H2O		1.7736
H2S		0.8307
CO2		0.5750
N2		0.0064
METHANE		2.9128
ETHANE		6.6455
PROPANE		7.7643
IBUTANE		2.5383
BUTANE		5.8754
IPENTANE		1.6916
PENTANE		2.6682
HEXANE		2.0796
CORTE01		0.1061
corte02		0.0052
CORTE03		0.2441
CORTE04		0.1884
CORTE05		0.0238
CORTE06		0.0953
CORTE07		0.0108
CORTE08		0.0666
CORTE09		0.0453

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Estimated CH_4 Volume

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IRIDE BATTERY VAPORS TO RECOVERY UNIT		
YEAR	CURRENT SITUATION	PROPOSED SITUATION
2007	9.7	11
2008	8.98	10.1
2009	6.85	7.77
2010	5.12	5.81
2011	4.18	4.74
2012	4.08	4.63
2013	3.73	4.24
2014	3.24	3.68
2015	2.96	3.36
2016	2.72	3.09
2017	2.53	2.87
2018	2.5	2.83

SAMARIA II BATTERY VAPORS TO RECOVERY UNIT		
YEAR	CURRENT SITUATION	PROPOSED SITUATION
2007	3.63	10
2008	3.55	9.78
2009	3.3	9.15
2010	2.95	8.12
2011	2.57	7.1
2012	2.43	6.71
2013	2.34	6.45
2014	2.25	6.2
2015	2.18	6
2016	2.14	5.89
2017	1.97	5.42
2018	1.93	5.31

Gas Volume to Be Recovered	
YEAR	DIFFERENCE
2007	7.67
2008	7.44
2009	6.77
2010	5.86
2011	5.09
2012	4.83
2013	4.62
2014	4.39
2015	4.22
2016	4.12
2017	3.79
2018	3.71

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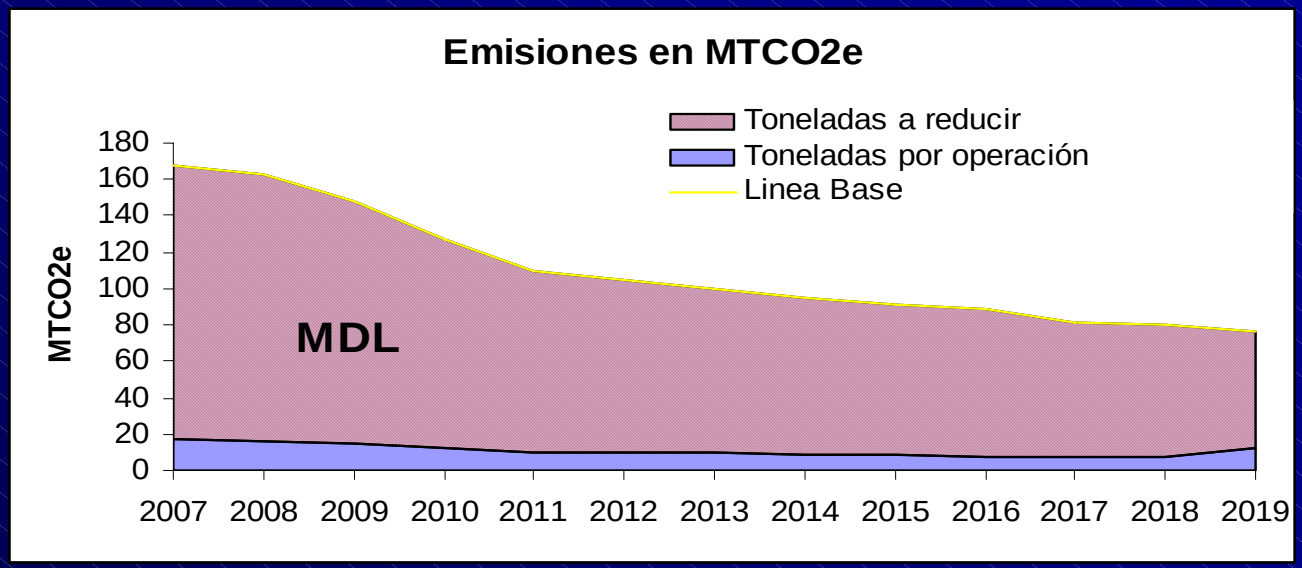
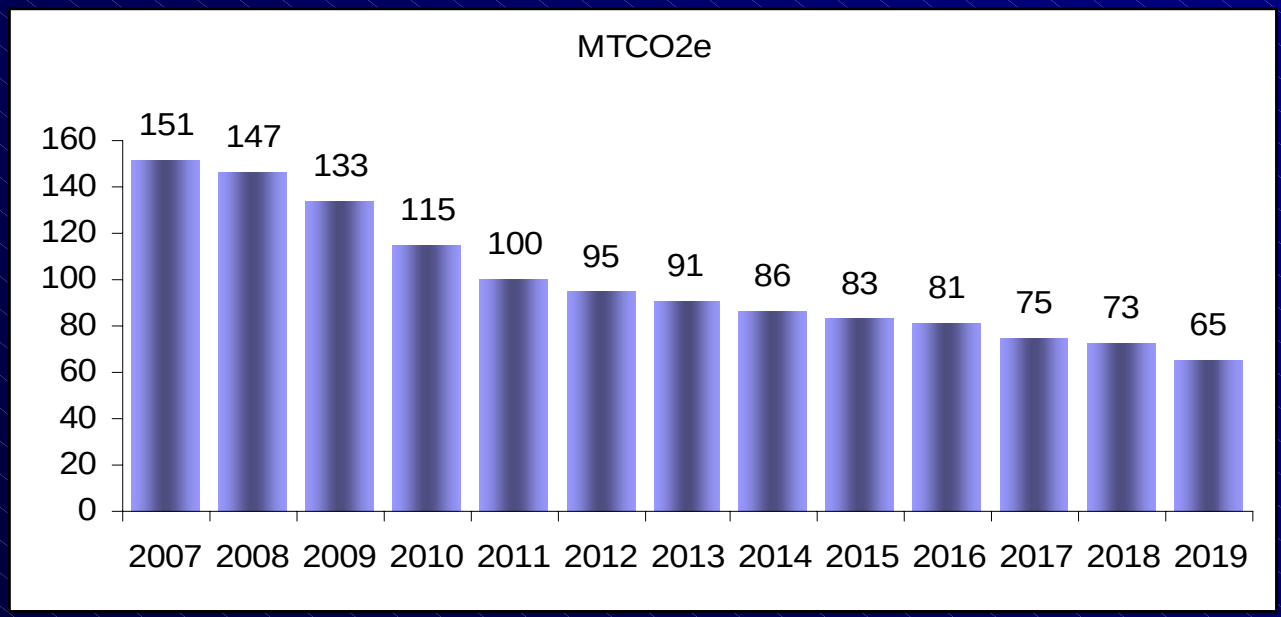
Estimated CH_4 Volume



Total Estimated Reduction



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Challenges

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CH_4 Volume

- Real measurement at different battery points is required to determine a methane emission value obtained under real operation conditions.

- Choosing the best technology for measurement.

- Be able to recover the largest amount of vapors possible to integrate them into the process.

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Conclusions

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Conclusions

- Vapor recovery represents an opportunity area because this type of projects could be replicable at different installations.

- The M2M initiative could help in finding the most appropriate technologies to reinforce the estimated methane volume to be recovered in different projects.