

GARAH Critical Screening Parameters					Source (Ref.list)	Comments	3010			
Shale Name:		Posidonia Shale Formation					REFERENCE LIST : 1. Bergen, F. van, Zijp, M.H.A.A., Nelskamp, S. and Kombrink, H. [2013] Shale gas evaluation of the Early Jurassic Posidonia Shale Formation and the Carboniferous Epen Formation in the Netherlands. AAPG Hedberg Memoir, 103, 1–24. 2. Bouw, S. and Lutgert, J. [2012] Shale Plays in The Netherlands. SPE/EAGE European Unconventional Resources Conference and Exhibition, SPE 152644. 3. Zijp, M.H.A.A. Nelskamp, S.N., Schavemaker, Y.A., ten Veen, J.H., ter Heege, J.H. [2013] Multidisciplinary Approach for Detailed Characterization of Shale Gas Reservoirs, a Netherlands Showcase. Offshore Technology Conference, Brasil, OTC-2483-MS 4. Verreussel, R.M.C.H., Zijp, M.H.A.A., S. Nelskamp, L. Wasch, G. de Bruin, J. ter Heege and J. ten Veen. 2013. Pay-zone identification workflow for shale gas in the Posidonia Shale Formation, the Netherlands, First Break Volume 31, February 2013 5. Zijp, M.H.A.A., ten Veen J., Verreussel, R., ter Heege, J., Ventra, D., Martin, J. [2015] Shale gas formation research: from well logs to outcrop - and back again. First Break Volume 33, February 2015 6. Zijp, M.H.A.A., Nelskamp, S., Verreussel, R., ter Heege, J. [2015] The Geverik Member of the Carboniferous Epen Formation, Shale Gas Potential in Western Europe, IPTC-18410-MS 7. Zijp, M.H.A.A., ter Heege, J. [2014] Shale gas in the Netherlands: current state of play. International Shale Gas & Oil Journal, Volume 2, Issue 1, February 2014 8. Zijp, M., ten Veen, J., Ventra, D., Verreussel, R., van Laerhoven, L., Boxem, T. [2014] New Insights From Jurassic Shale Characterization: Strenghtens Subsurface Data With Outcrop Analogues 9. Balen, R.T. van, Van Bergen, F., De Leeuw, C., Pagnier, H., Simmelink, H., Van Wees, J.D., and Verweij, J.M., 2000. Modelling the hydrocarbon generation and migration in the West Netherlands Basin, the Netherlands. Geologie en Mijnbouw / Netherlands Journal of Geosciences 79: 29-44. 10. Jager, J. de and M. C. Geluk, 2007. Petroleum Geology. In: Wong, T. E., Batjes, D. A. J. and De Jager, J. (Eds) Geology of the Netherlands. Royal Dutch Academy of Arts and Sciences, Amsterdam, 237–260. 11. Trabucho-Alexandre, A., Dirkx, R., Veld H., Klaver G. and de Boer, P.L. 2012. Toarcian black shales in the Dutch Central Graben; record of energetic, variable depositional conditions during an oceanic anoxic event. Journal of Sedimentary Research, 82(2), 104–120. 12. EIA/ARI World Shale Gas and Shale Oil Resource Assessment, Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States http://www.eia.gov/analysis/studies/worldshalegas/pdf/fullreport.pdf 13. Bonté, D., van Wees, J.-D., Verweij, J.M. (2012) Subsurface temperature of the onshore Netherlands: new temperature dataset and modelling. Netherlands Journal of Geosciences 91(4), 491-515. 14. www.nlog.nl 15. Nelskamp, S., Goldberg, T., Houben, S., Geel, K., Wasch, L., Verreussel, R., Boxem, T. (2015) Improved sweet spot identification and smart development using integrated reservoir characterization (Phase 2). TNO report 2015 R10740 16. ten Veen, J., Verreussel, R.M.C.H., Ventra, D., Zijp, M.H.A.A., Boxem, T.A.P. (2014) Improved Sweet Spot Identification and smart development using integrated reservoir characterization. TNO report 2014 R10265			
Country:		Netherlands								
Age (Age):		Toarcian								
Age (Epoch):		Lower Jurassic								
Basin:		North Sea								
Chance of success parameters					Source (Ref.list)	Comments				
Mapping status		Good								
Sedimentary variability		Low								
Structural complexity		Moderate								
Available HC data		Good								
Proven source rock		Proven								
Maturity variability		Moderate								
Depth		Average								
Mineral composition		Poor								
Detailed parameter list					Min	Max	Mean	Distribution	Source (Ref.list)	Comments
1. Area (km2)							6240	Normal	15	see depth map
										If possible provide thickness map
2. Thickness (gross, m)										
2a. Thickness (net, m)					26	58	41	Normal	15	see thickness map
2b. Net/Gross (%)							90			
3. Depth (m)					516	7058	3124	Normal	15	see depth map
4. Density (g/cm3)										
5. TOC (%)					2	18	5,7	Normal	1,2,15	If possible provide map
6. Porosity (%)					5	13	7	Normal	1,2,7	
7. Maturity (%VR) or graptolite equivalent					0	2,5	0,8	Normal		see map
										Mpa - based on reservoir pressure measurements in a directly overlying reservoir
8. Reservoir pressure (psi)					9,79	46,32	26,6	Normal	14	
										average geothermal gradient of 31,3 C/km onshore
9. Reservoir Temperature (°C)								Normal	13	
10. Gas saturation (%) (Sg)					0	50	23		1,2	
11. Oil Saturation (%) (So)										
12. Gas generation mgHC/g TOC (Hydrogen index)										
13. Kerogen type							Type II		1,7,8	
14. Sorption capacity VReq. - 1,9 % (mmol/g)										
15. Matrix permeability (nDarcy)					190	16000			2	
16. Adsorbed gas storage capacity (scf/ton)							81		2	
17. Compressibility factor (z)										
18a. Bg - Gas formation volume factor							195		1	
18b. Bo - Oil formation volume factor										
19. Langmuir Pressure (pL, psi)										
20. Langmuir Volume (nL, scf/ton)										
21. Bulk mineral constituents XRD										
21a Total Clay content (%)					40	70			16	
Content of smectite					0	10			16	
Content of Illite & Mica					5	10			16	
Content of Kaolinite					10	20			16	
21b Quartz-feldspars content (%)					10	20			16	
21c Carbonate content (%)					2	20			16	