

# Bio Diesel Update

- Green Ship Initiative – B100
- Inter Agency Task Force
- Army Corps of Engineers – B100
- Navy – HR-D
- 2<sup>nd</sup> Generation Bio Diesel

# Executive Order 13514

- Petroleum Reduction – 2% annually through 2020
- Increase Alternative Fuel – 10% annually through 2015
- GHG Reporting and Reduction Targets

# Main Stream B100

- Challenges
  - Fuel / Additive Designation
  - Distribution Infrastructure
  - Military acceptance
  - Conclusive reporting
  - Trial methodology
- Move to a Coordinated Effort
  - Create an Inter Agency Work Group

# Source Data

- Data spread
- Engine size
- Engine type
- Duty cycle
- Fuel type
- Test conditions

Figure IV.A.1-4  
Comparison of data to basic HC correlation

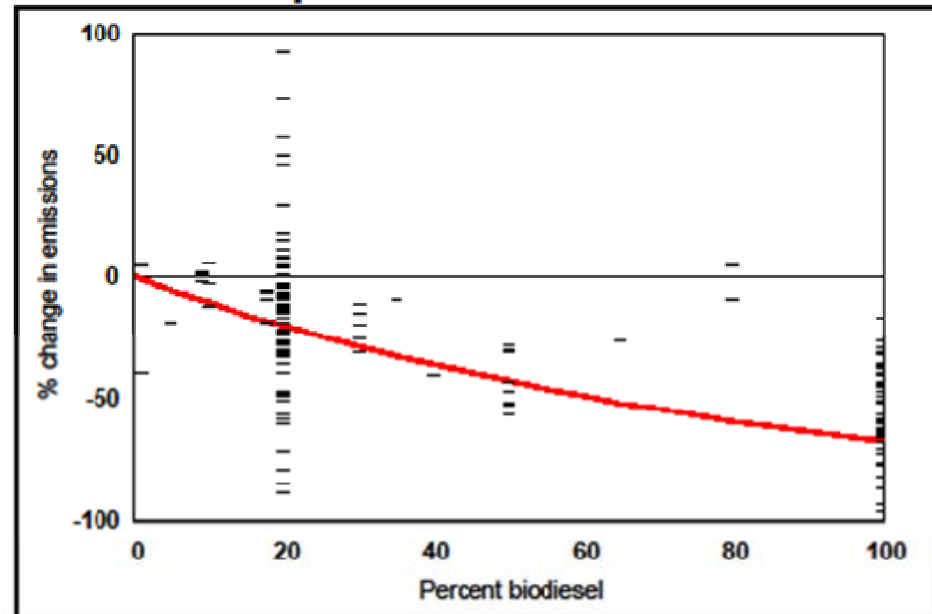
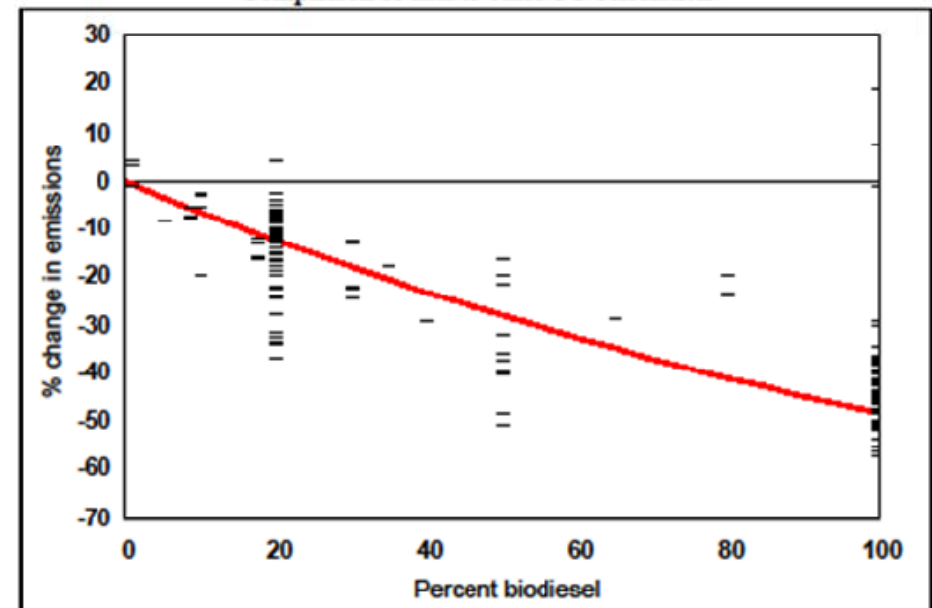


Figure IV.A.1-5  
Comparison of data to basic CO correlation



# Inter Agency Work Group

- NOAA - GLERL
- Army Corps of Engineers – Marine Design Center
- Coast Guard – Fuels and Lubricants Group
- Navy – Advanced Fuels Program Office
- NAVSEA
- Air Force – Alternative Fuel Lab
- Defense Logistic Agency
- General Services Agency
- MARAD



# GSI - Standardized Test Methods and Reporting

Information | **Graphics** | Measure values

[ppm NO] [% O2] [ppm CO] [% CO2]

150 6,6 100 12,0

140 6,4 90 11,8

130 6,2 80 11,6

120 6,0 70 11,4

110 5,8

100 5,6

90 5,4

80 5,2

70 5,0

Information | Graphics | **Measure values**

Date / time	% O2	ppm...	ppm...	% C...	ppm...	ppm...	% Eff	°C Tf	l/mi...	ppm...	°C Ta	% η
16.02.2006 09:50...	5,08	5	97	11,60	1,8	99	87,6	173,9	0,95	0	23,7	12,4
16.02.2006 09:50...	5,08	5	97	10,76	1,8	99	87,6	173,9	0,51	0	23,7	13,0
16.02.2006 09:50...	6,37	1	51	10,76	0,9	51	87,0	173,9	0,51	0	23,7	13,0
16.02.2006 09:50...	6,37	1	51	10,76	0,9	51	87,1	172,1	0,51	0	23,9	12,9
16.02.2006 09:50...	5,66	1	51	10,73	0,9	51	87,4	172,1	0,92	0	23,9	12,6
16.02.2006 09:50...	5,66	1	73	10,73	0,9	74	87,4	172,2	0,92	0	23,9	12,6
16.02.2006 09:50...	5,66	1	73	10,73	0,9	74	87,4	172,2	0,92	0	24,0	12,6
16.02.2006 09:50...	5,06	2	90	10,73	0,9	91	87,6	172,2	0,95	0	24,0	12,4
16.02.2006 09:50...	5,06	2	90	10,73	0,7	91	87,6	172,2	0,95	0	24,0	12,4
16.02.2006 09:50...	5,06	2	90	11,68	0,7	91	87,6	172,2	0,95	0	24,0	12,4
16.02.2006 09:50...	4,94	3	94	11,68	1,1	95	87,7	172,2	0,95	0	24,0	12,3
16.02.2006 09:50...	4,94	3	94	11,68	1,1	95	87,7	172,4	0,95	0	24,2	12,3
16.02.2006 09:50...	4,96	3	94	11,69	1,1	95	87,7	172,4	0,95	0	24,2	12,3
16.02.2006 09:50...	4,96	3	96	11,69	1,4	97	87,7	172,5	0,95	0	24,1	12,3
16.02.2006 09:50...	4,96	3	96	11,58	1,4	97	87,7	172,5	0,95	0	24,1	12,3
16.02.2006 09:50...	5,01	3	97	11,58	1,4	98	87,7	172,5	0,95	0	24,1	12,3
16.02.2006 09:50...	5,01	3	97	11,58	1,4	98	87,7	172,6	0,95	0	24,2	12,3
16.02.2006 09:50...	5,08	3	97	11,58	1,4	98	87,6	172,6	0,95	0	24,2	12,4
16.02.2006 09:50...	5,08	3	97	11,58	1,4	98	87,6	172,7	0,95	0	24,2	12,4
16.02.2006 09:50...	5,08	3	97	11,58	1,4	98	87,6	172,7	0,95	0	24,2	12,4
16.02.2006 09:50...	5,08	3	97	11,58	1,4	98	87,6	172,7	0,95	0	24,2	12,4
16.02.2006 09:50...	4,96	4	98	11,58	2,0	100	87,7	172,7	0,95	0	24,2	12,3
16.02.2006 09:50...	4,96	4	98	11,58	2,0	100	87,7	172,7	0,95	0	24,2	12,3
16.02.2006 09:50...	4,96	4	98	11,77	2,0	100	87,7	172,7	0,95	0	24,2	12,3
16.02.2006 09:50...	4,95	4	98	11,77	2,0	100	87,7	172,7	0,95	0	24,2	12,3
16.02.2006 09:50...	4,95	4	98	11,77	2,0	100	87,7	172,7	0,95	0	24,2	12,3
16.02.2006 09:50...	4,98	4	98	11,77	2,0	100	87,7	172,7	0,95	0	24,2	12,3
16.02.2006 09:50...	4,98	4	97	11,77	2,0	99	87,7	173,0	0,95	0	24,2	12,3
16.02.2006 09:50...	4,98	4	97	11,65	2,0	99	87,7	173,0	0,95	0	24,2	12,3

Function	% O2	ppm...	ppm...	% C...	ppm...	ppm...	% Eff	°C Tf	l/mi...	ppm...	°C Ta	% η
Minimum (total)	4,61	1	51	10,73	0,7	51	87,0	172,0	0,51	0	23,0	12,2
Maximum (total)	6,37	6	102	11,98	3,2	104	87,8	174,5	0,95	0	24,3	13,0

10:05

Save bitmap

Print | Save as PDF | Export Excel | Clipboard | Reporting

# Main Stream B100

- Progress
  - Fuel Designation – EPA position
  - 150 + vessels
  - DLA and GSA approvals
  - Military acceptance
    - Army Corps of Engineers
    - MARAD
  - Conclusive reporting
    - NAVFAC Technical Report
    - NOAA / EPA Report

# USACE – B100 Test Vessels



Grizzly



Mike Donlon



DB-5



Pathfinder

# USACE – B100 Introduction Timeline



January 2011 – “Pathfinder”



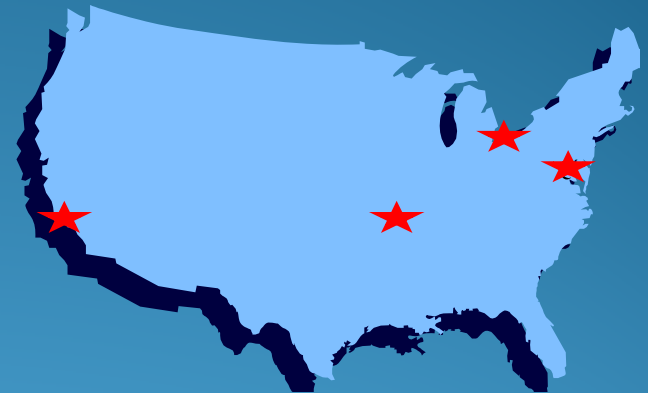
February 2011 – “Grizzly”



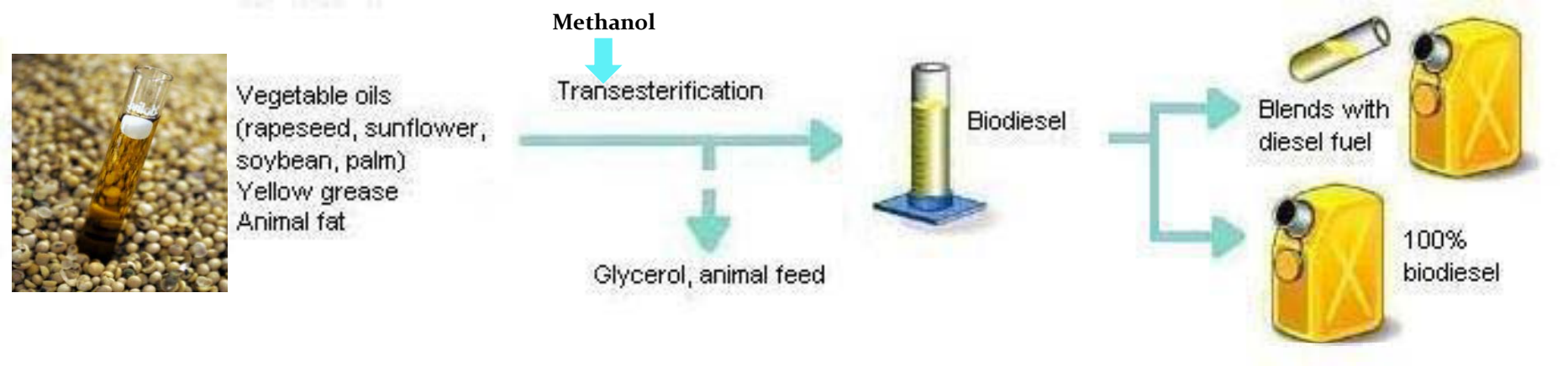
March 2011 – “DB-5”



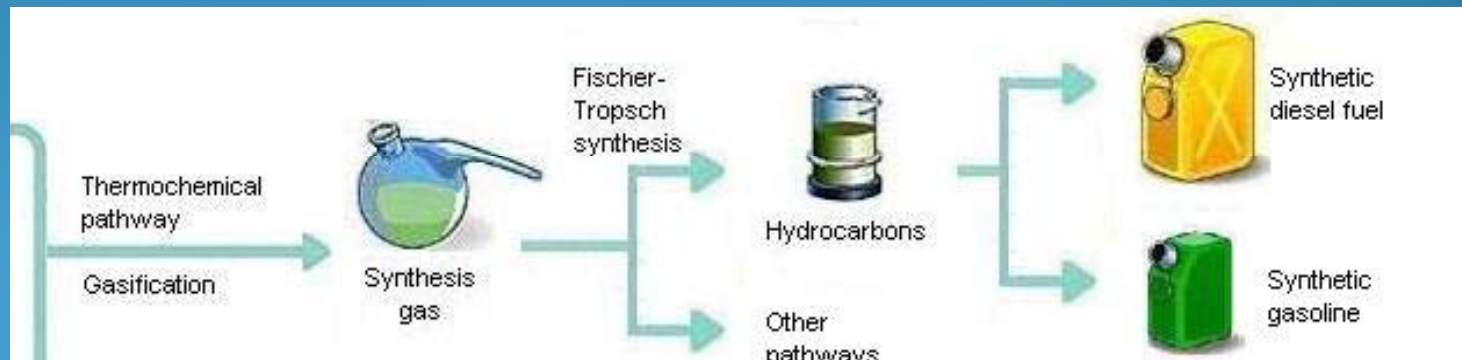
April 2011 – “Mike Donlon”



# 1st Generation Bio Diesel



# 2nd Generation Bio Diesel



## Naval Sea Command – Advanced Fuels Program

- “Drop in Replacement”
- 2<sup>nd</sup> Generation Bio Diesel “HR-D”
- Algae based 50/50 blend
- 2012 trial completion
- 2016 deployment

MARAD – NOAA

2<sup>nd</sup> Gen B100

GLERL - 2011

