

The Aqueous Phosphorylation and Thiophosphorylation of Aminonucleosides

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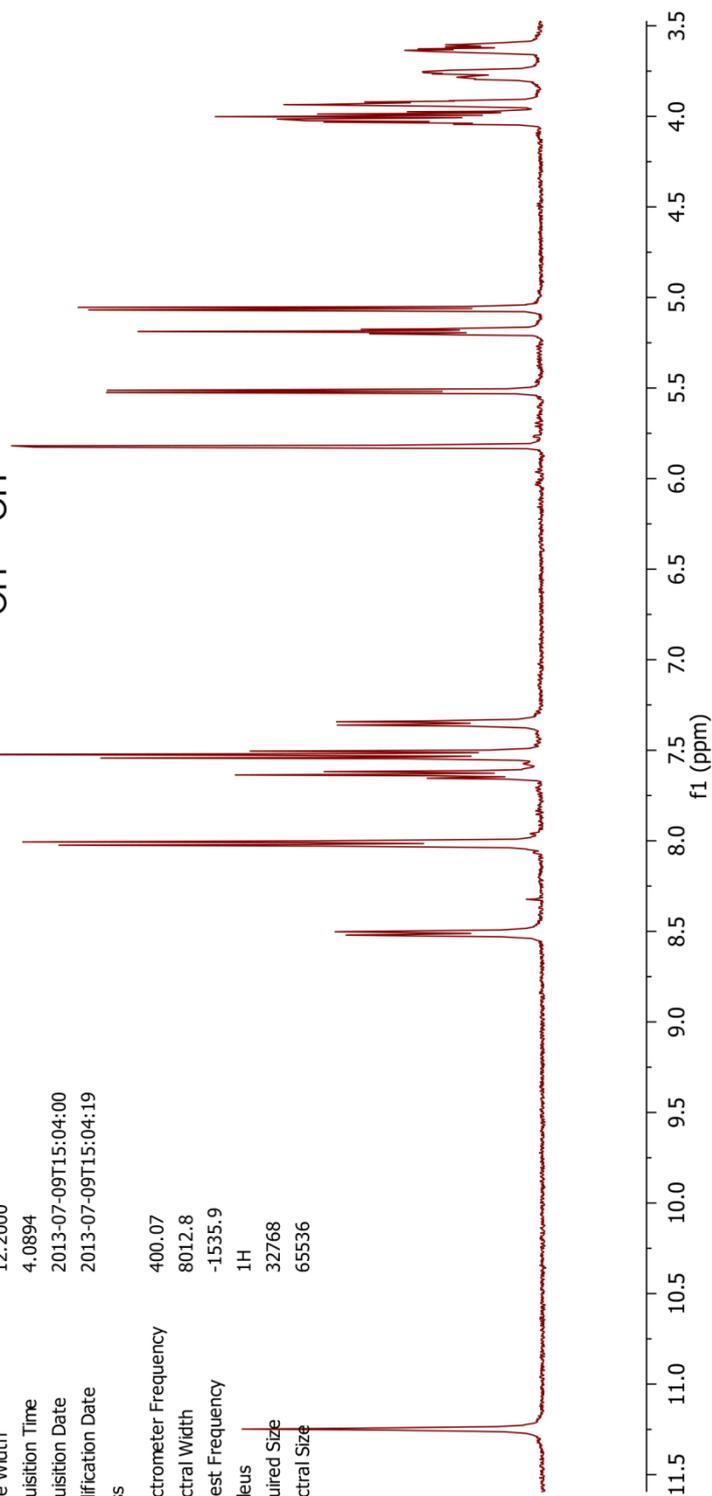
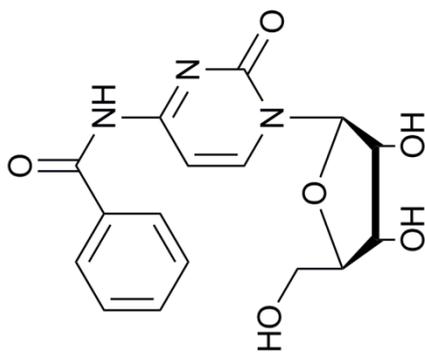
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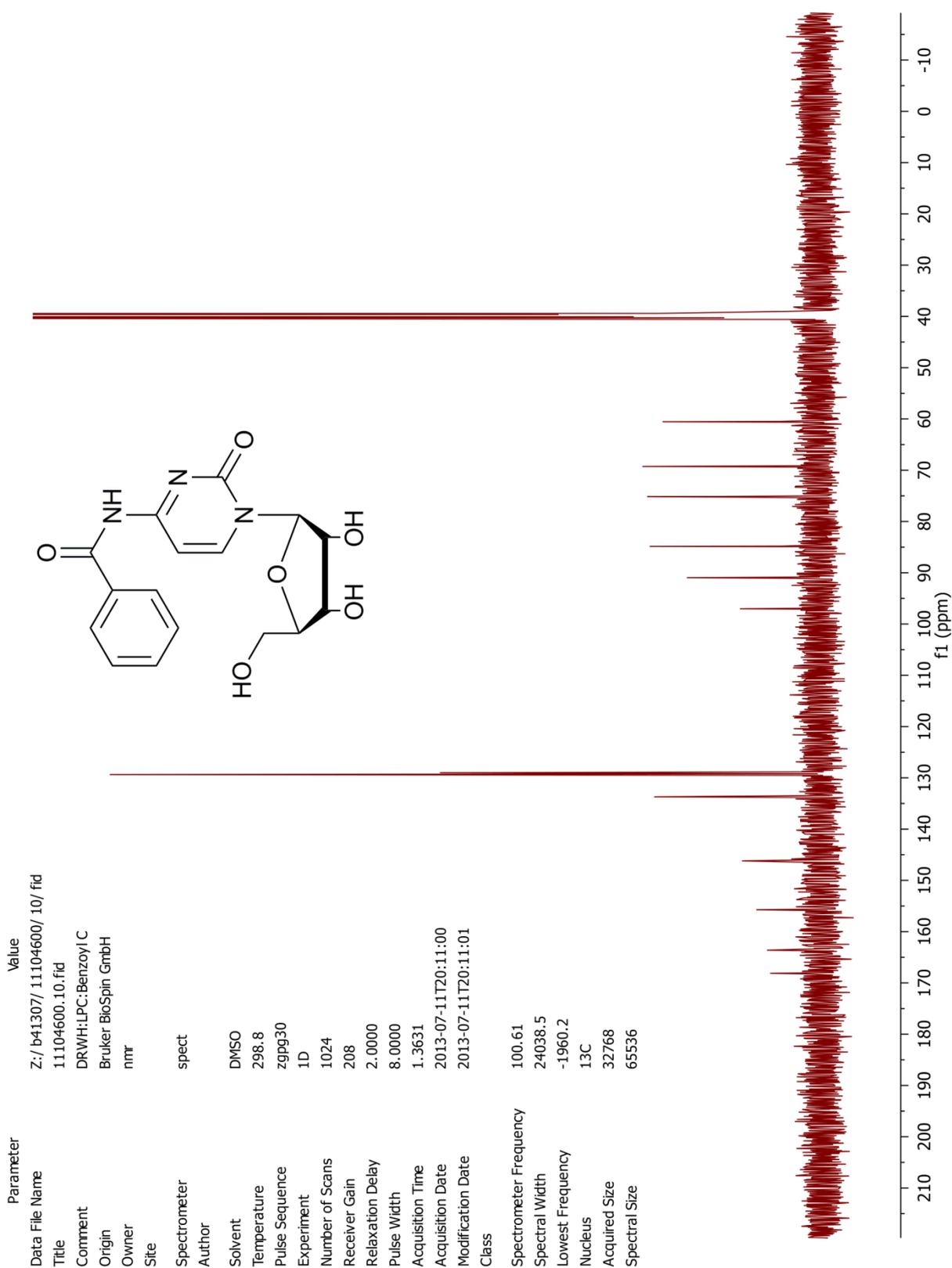
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N4-Benzoylcytidine, ¹H NMR Spectrum

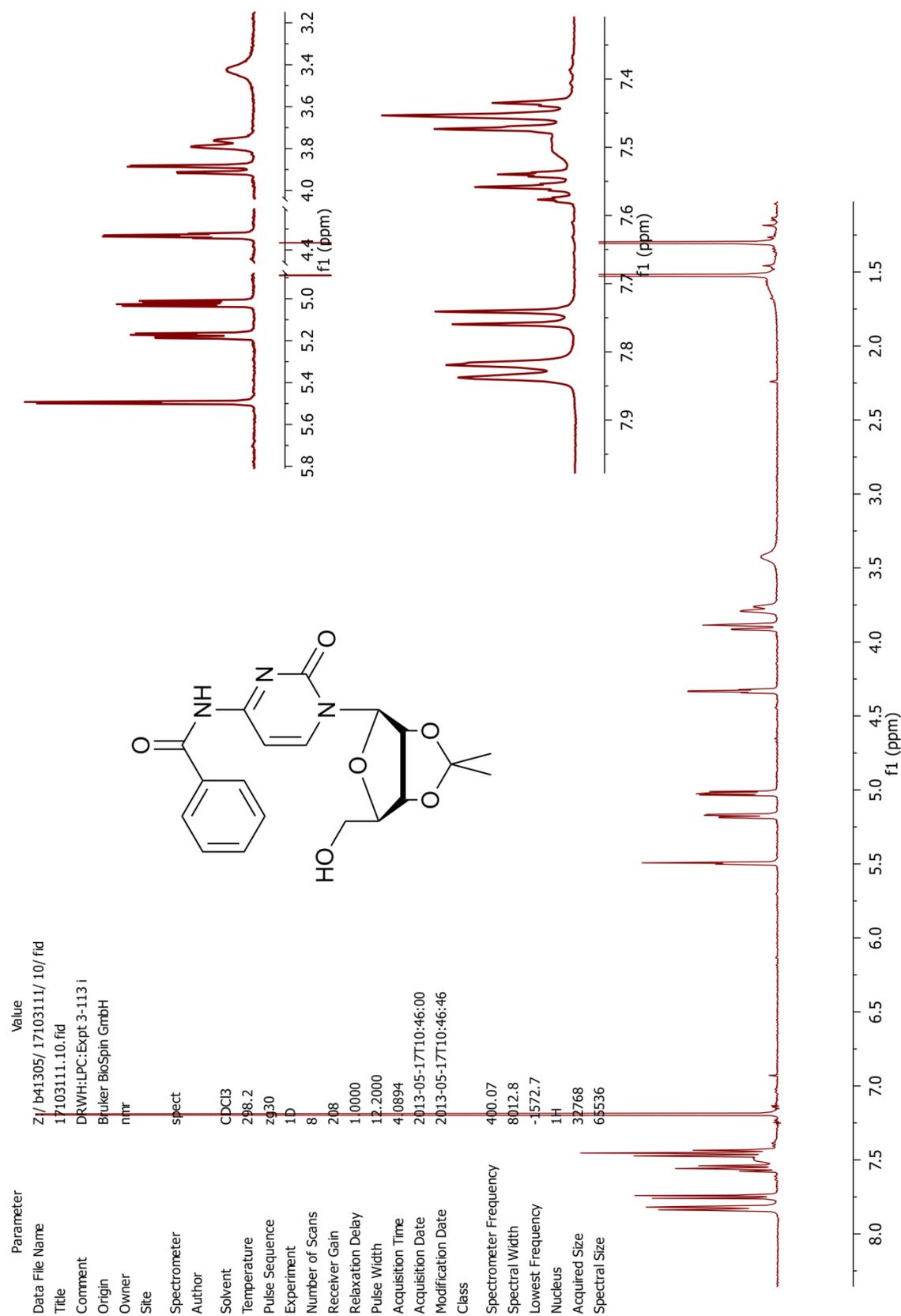
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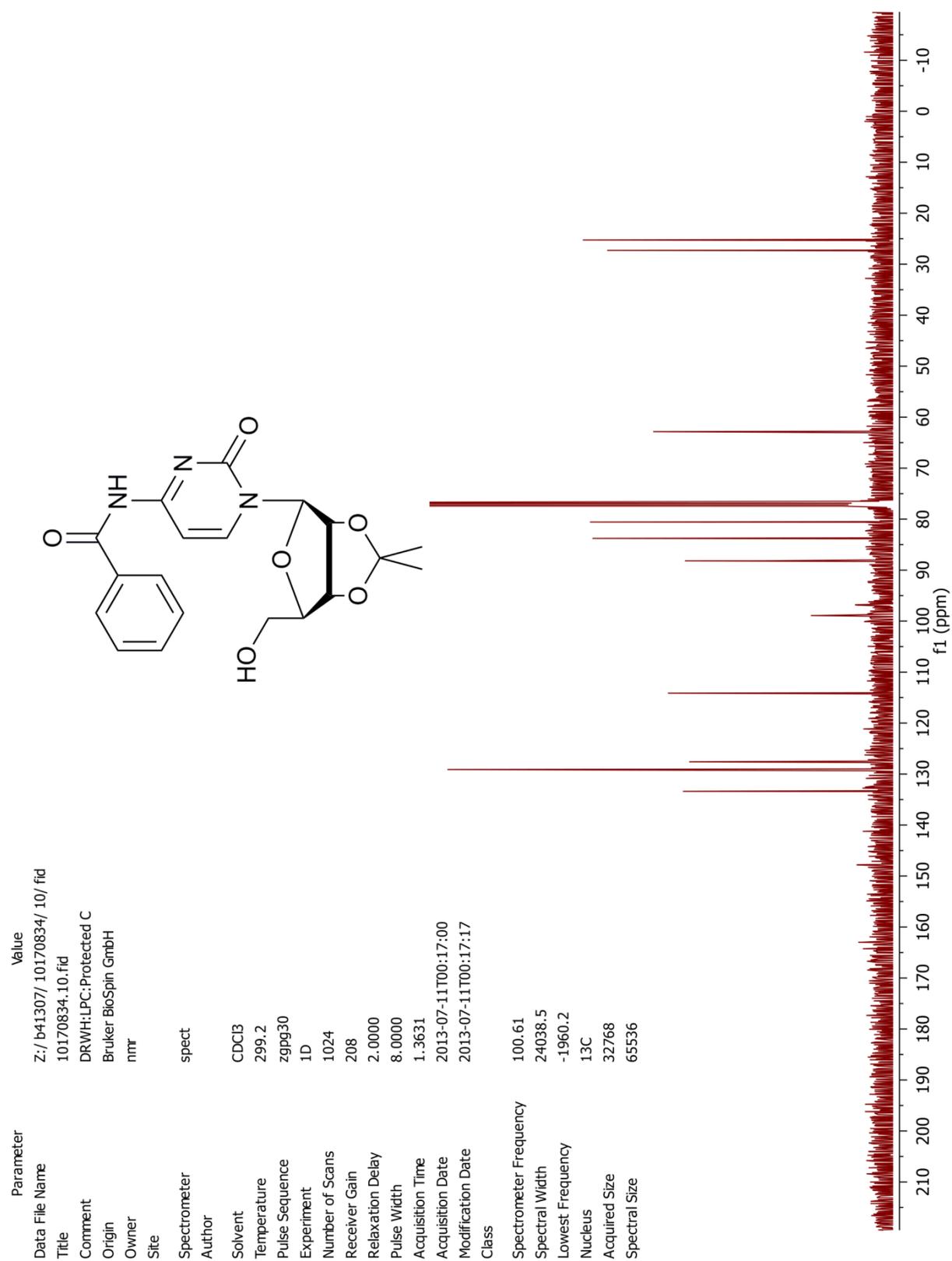
N4-Benzoylcytidine, ^{13}C NMR Spectrum



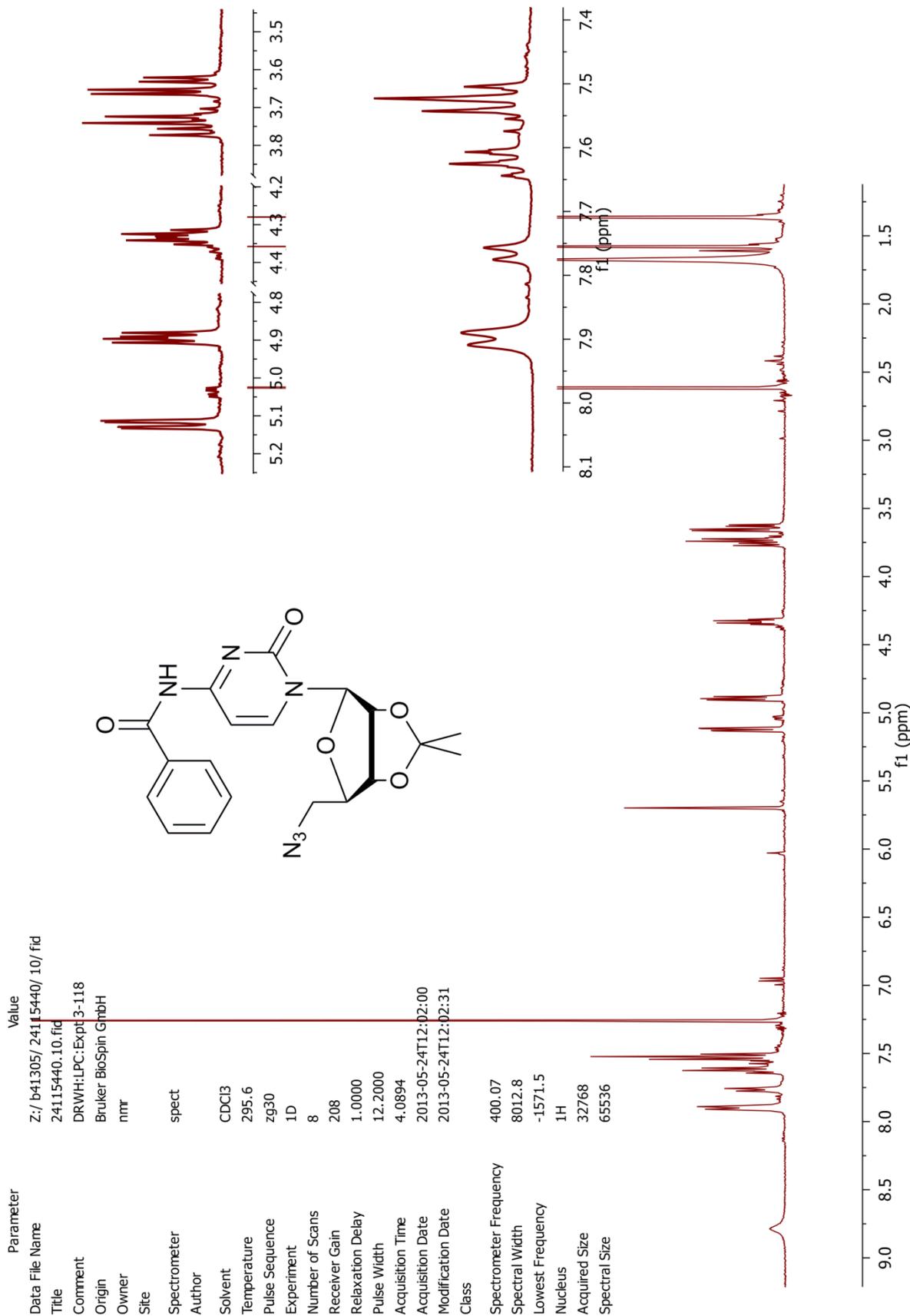
N4-Benzoyl-2,3-O-isopropylidencytidine (**17**), ¹H NMR Spectrum



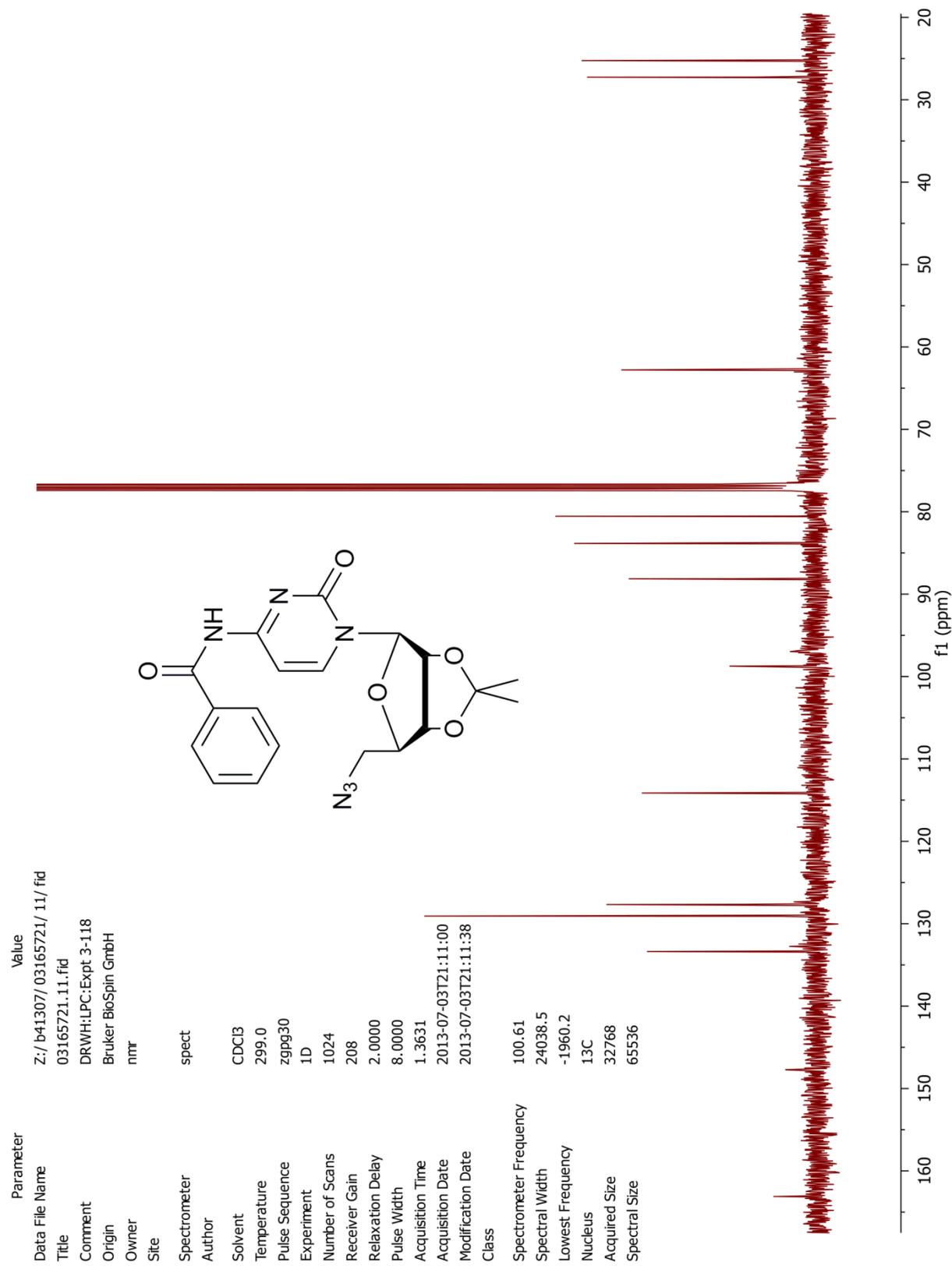
N4-Benzoyl-2,3-O-isopropylidencytidine (**17**), ¹³C NMR Spectrum



5'-Azido-5'-deoxy-N4-benzoyl-2',3'-O-isopropylidencytidine (18), ¹H NMR Spectrum

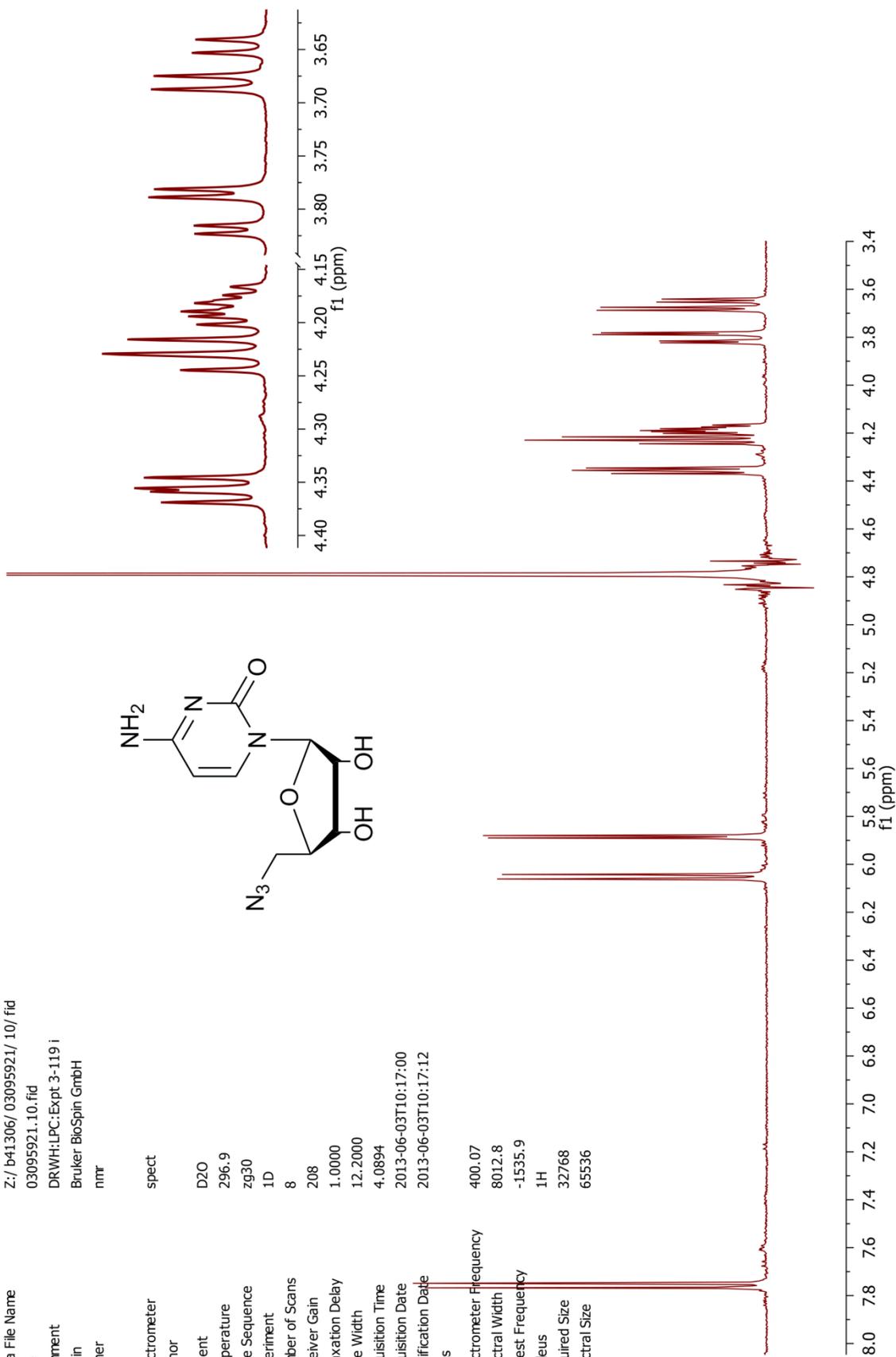
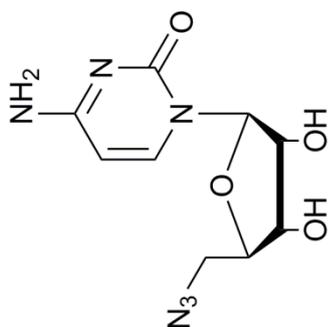


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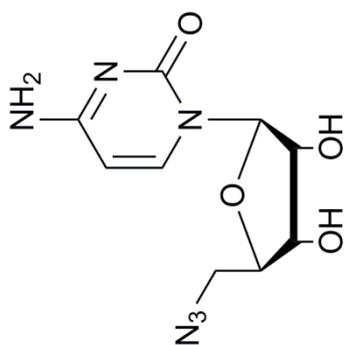


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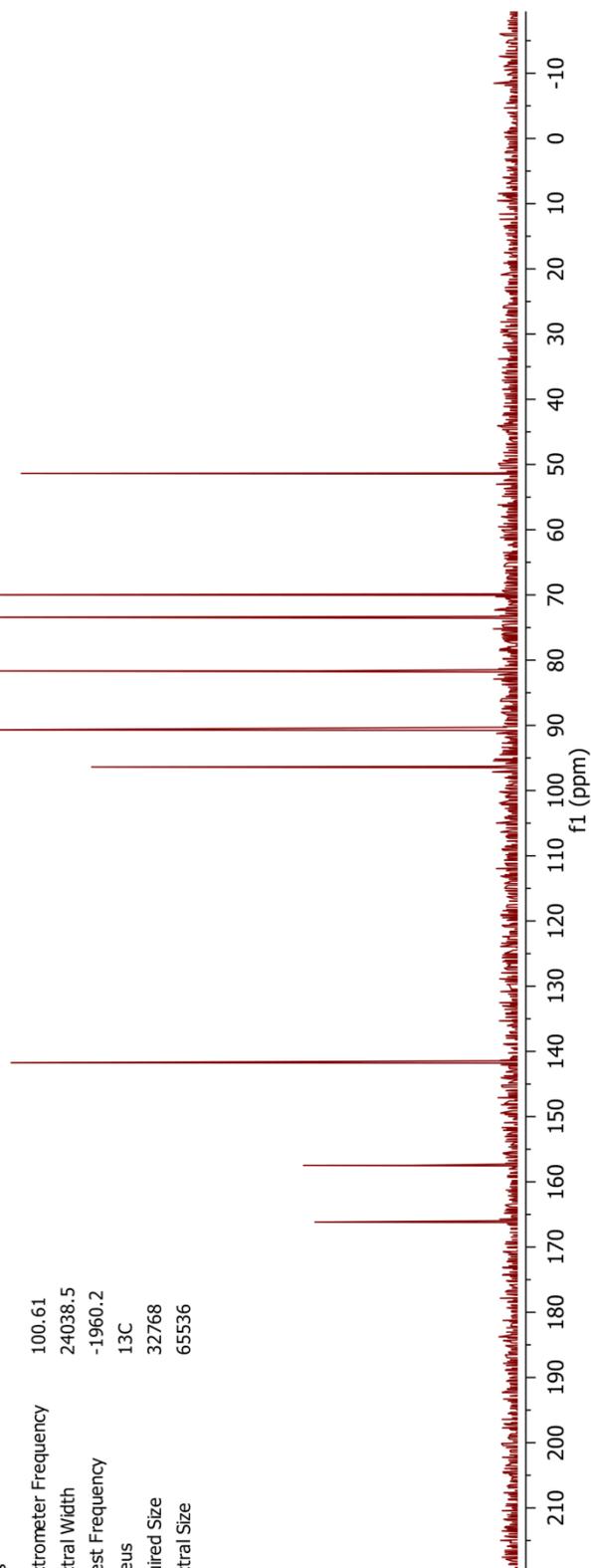
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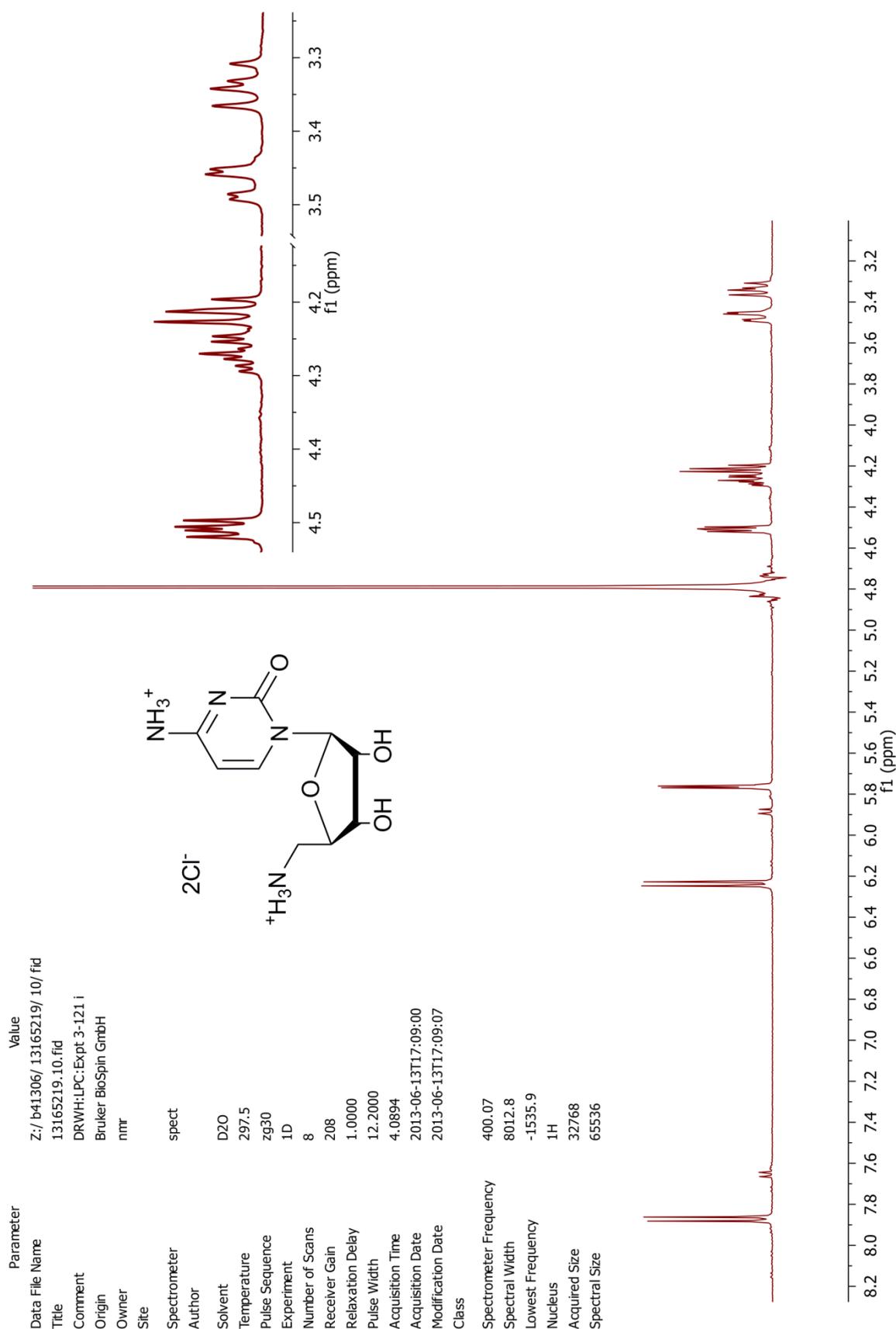
5'-Azido-5'-deoxycytidine (19), ¹³C NMR Spectrum



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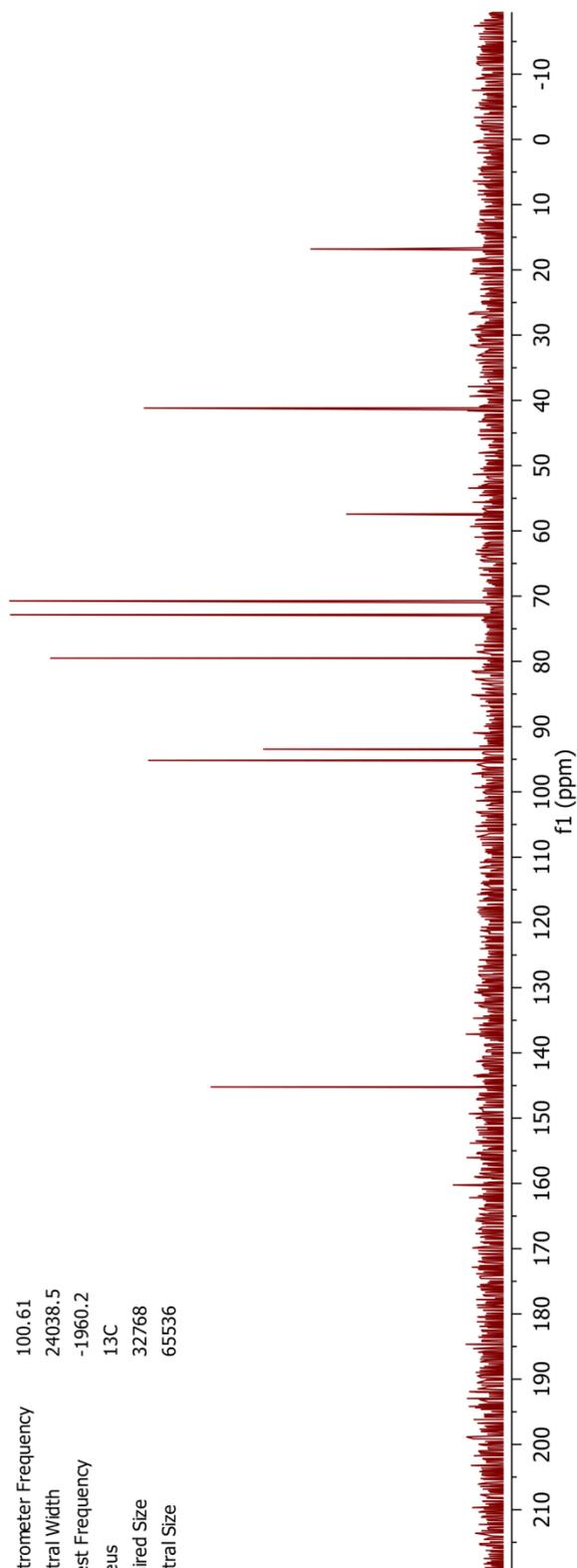
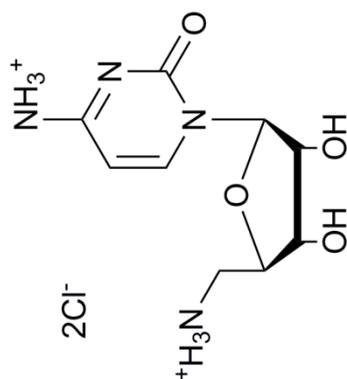
5'-Amino-5'-deoxycytidine (**20**), Dihydrochloride Salt, ^1H NMR Spectrum



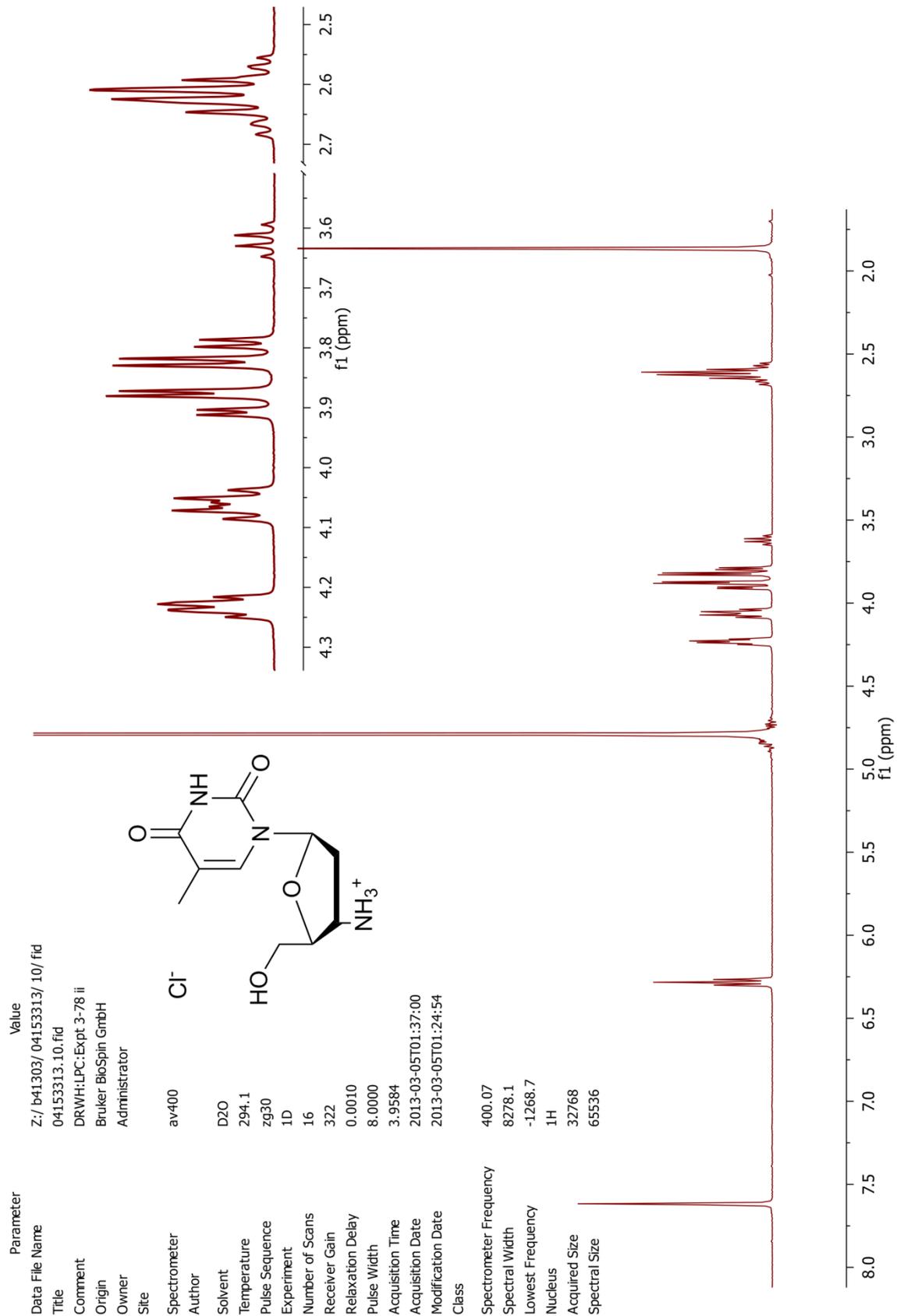
5'-Amino-5'-deoxycytidine (**20**), Dihydrochloride Salt, ¹³C NMR Spectrum

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Author	
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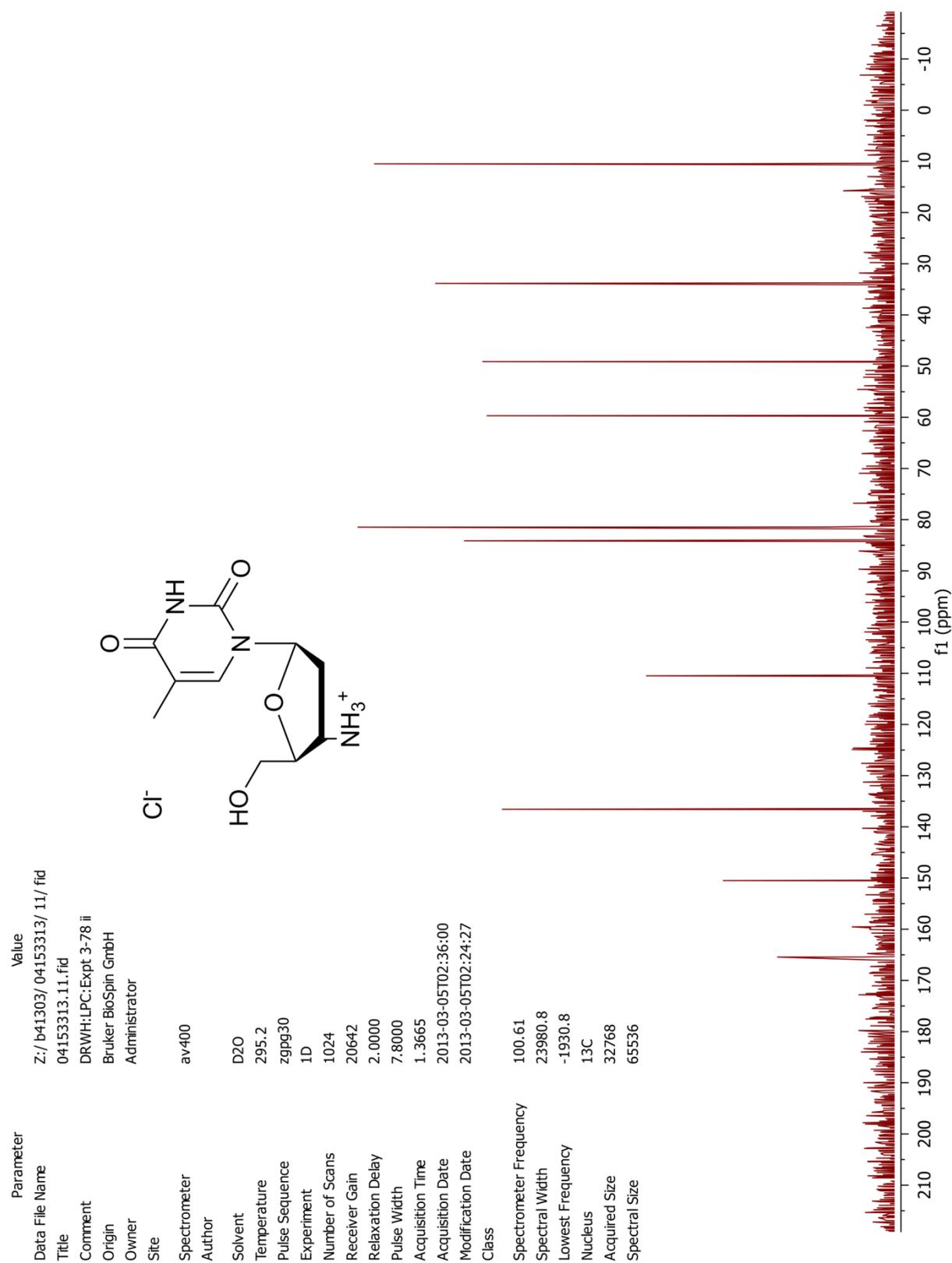
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3'-Amino-3'-deoxythymidine, Hydrochloride Salt, ¹H NMR Spectrum (12)

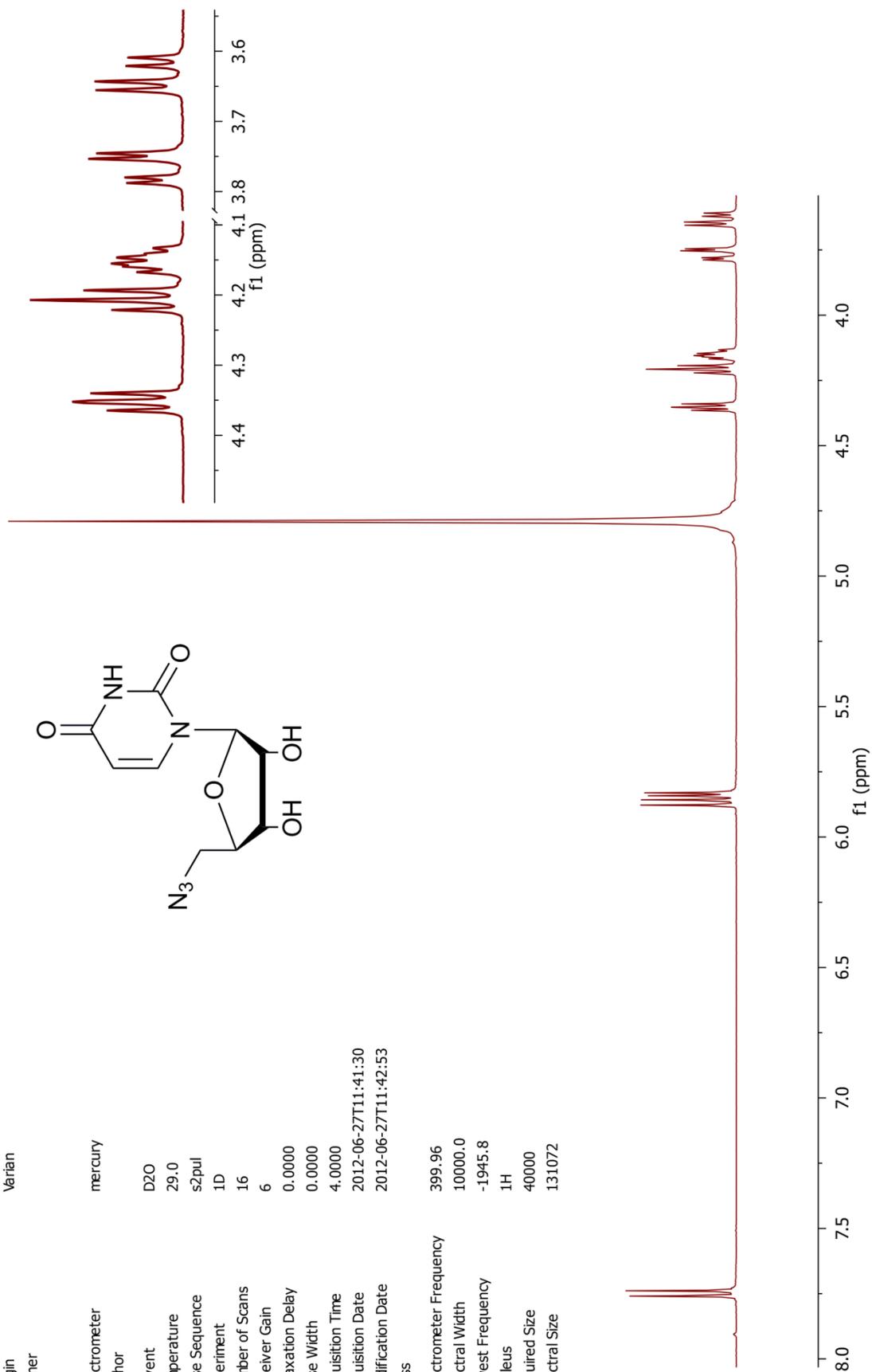
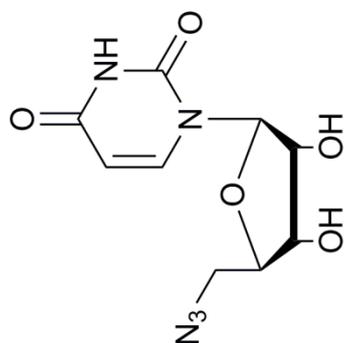


3'-Amino-3'-deoxythymidine, Hydrochloride Salt, ^{13}C NMR Spectrum (12)



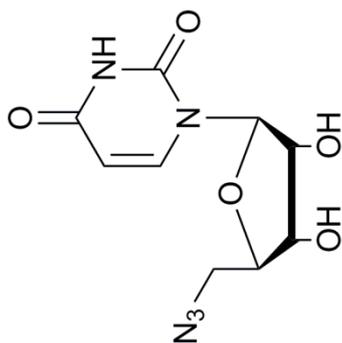
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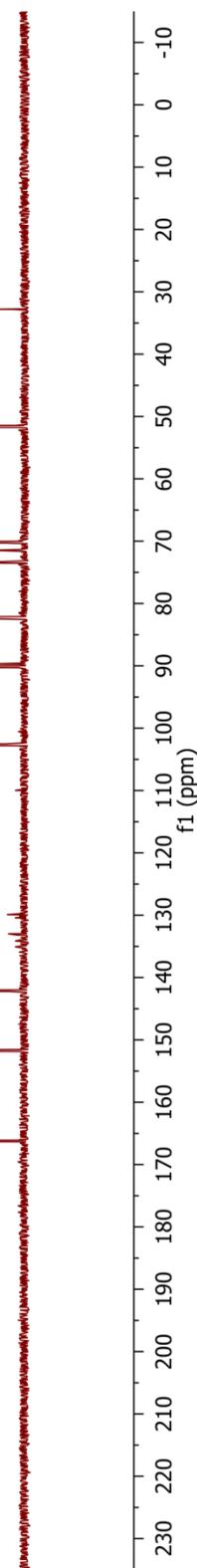


5'-Azido-5'-deoxyuridine (14), ^{13}C NMR Spectrum

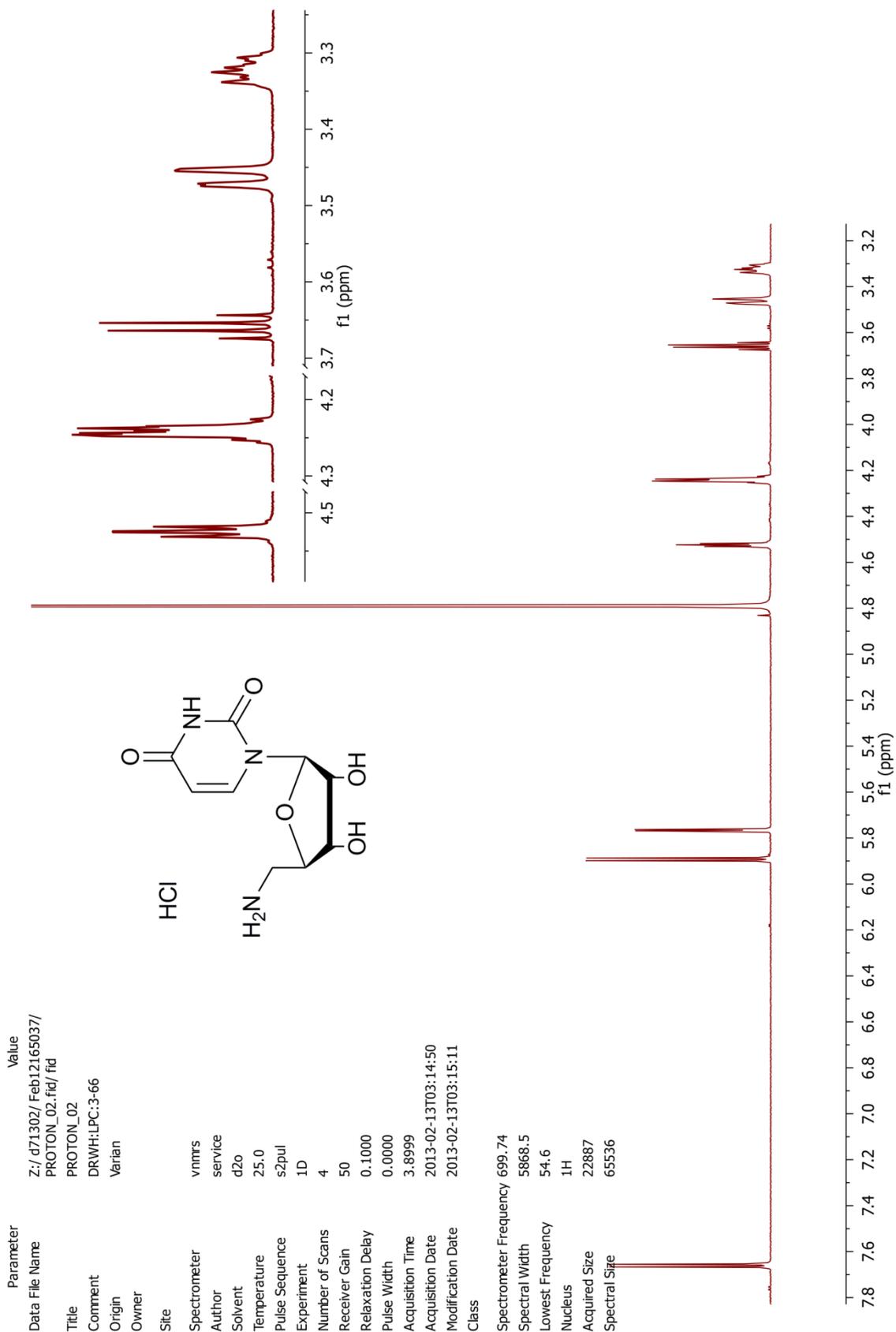
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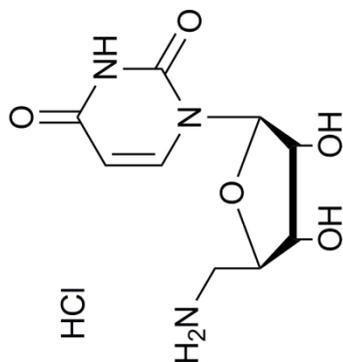


5'-Amino-5'-deoxyuridine (15), Hydrochloride Salt, ¹H NMR Spectrum

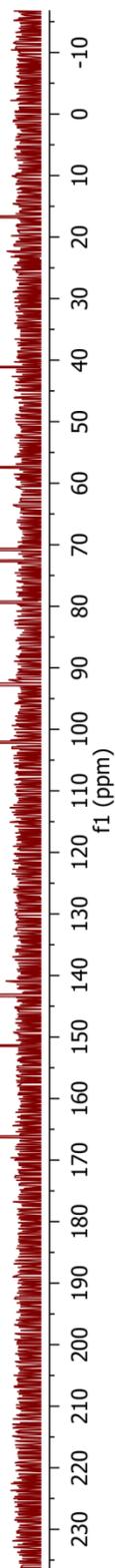


5'-Amino-5'-deoxyuridine (15), Hydrochloride Salt, ^{13}C NMR Spectrum

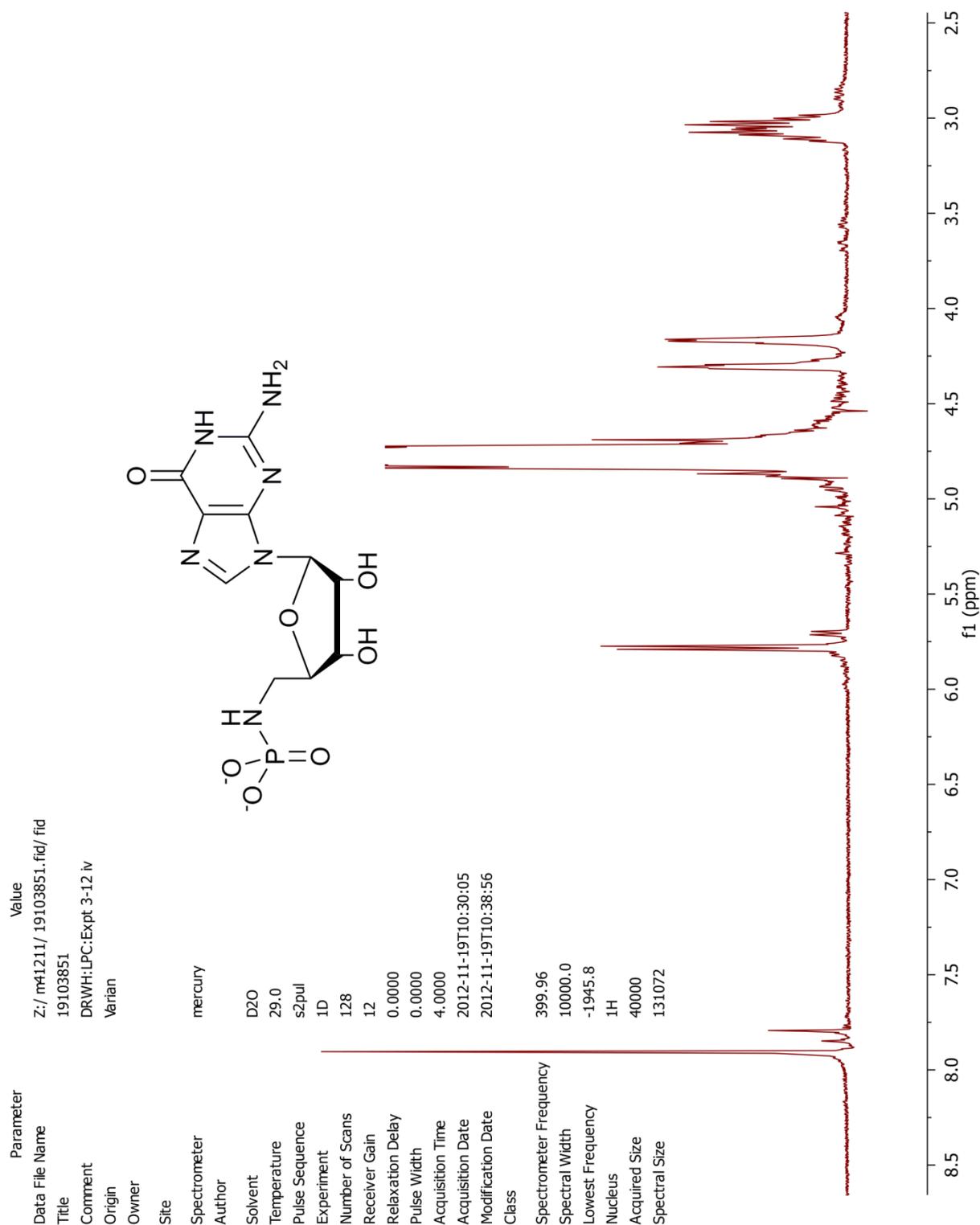
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Site	
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Author	
Solvent	d2o
Temperature	25.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	5000
Receiver Gain	60
Relaxation Delay	2.5000
Pulse Width	0.0000
Acquisition Time	1.4680
Acquisition Date	2013-02-13T03:21:25
Modification Date	2013-02-13T08:52:14



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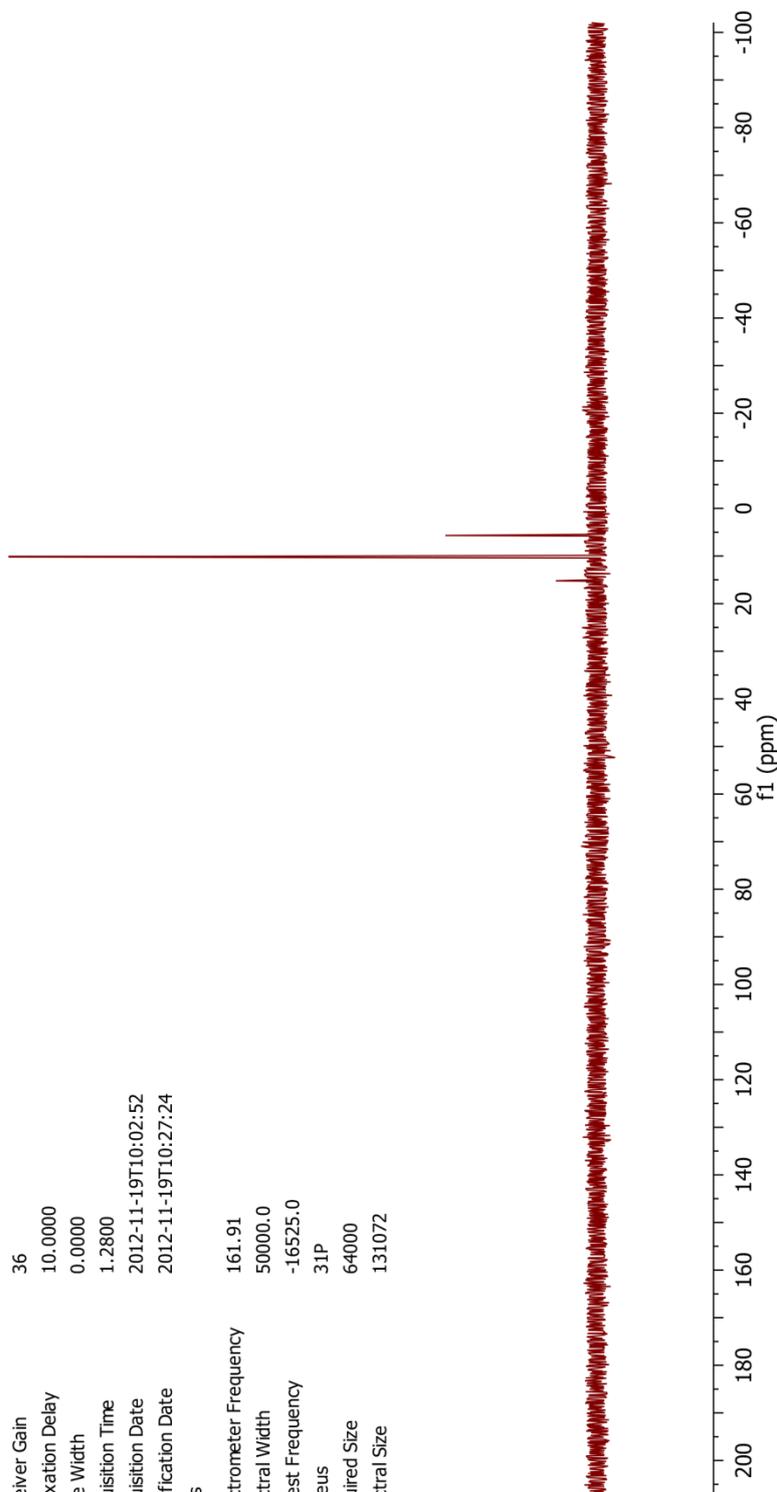
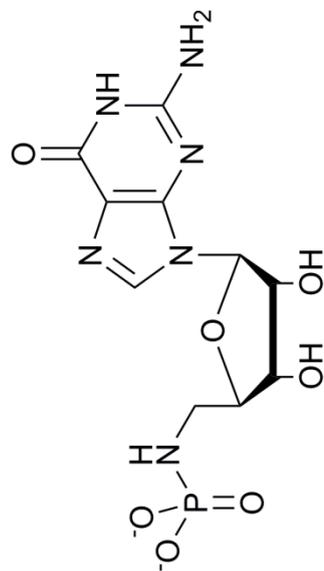


5'-Amino-5'-deoxyguanosine Phosphorylation with POCl₃, pH 11, ¹H NMR Spectrum

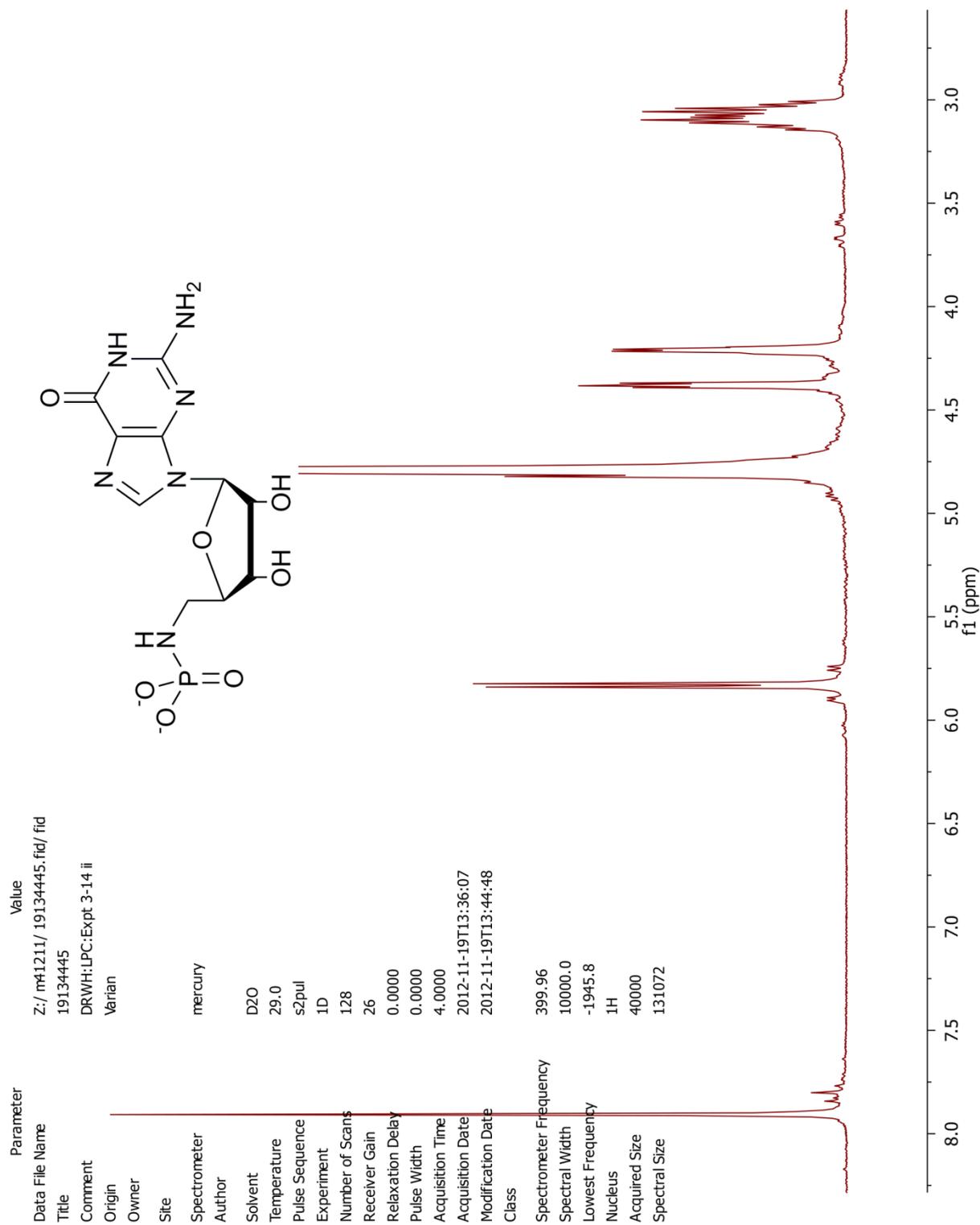


5'-Amino-5'-deoxyguanosine Phosphorylation with POCl_3 , pH 11, ^{31}P NMR Spectrum

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Title	19102721
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Site	mercury
Spectrometer	D20
Author	29.0
Solvent	s2pul
Temperature	1D
Pulse Sequence	128
Experiment	36
Number of Scans	10.0000
Receiver Gain	0.0000
Relaxation Delay	1.2800
Pulse Width	2012-11-19T10:02:52
Acquisition Time	2012-11-19T10:27:24
Acquisition Date	
Modification Date	
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Lowest Frequency	-16525.0
Nucleus	31P
Acquired Size	64000
Spectral Size	131072

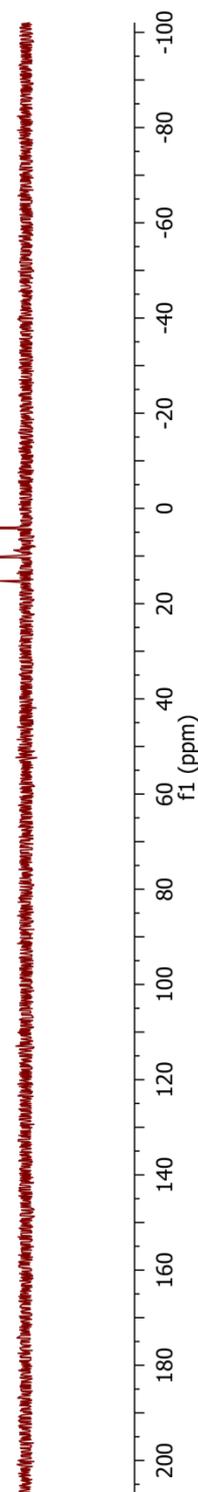
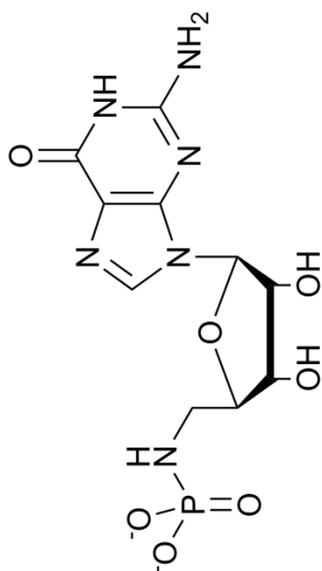


5'-Amino-5'-deoxyguanosine Phosphorylation with POCl₃, pH 11.5, ¹H NMR Spectrum

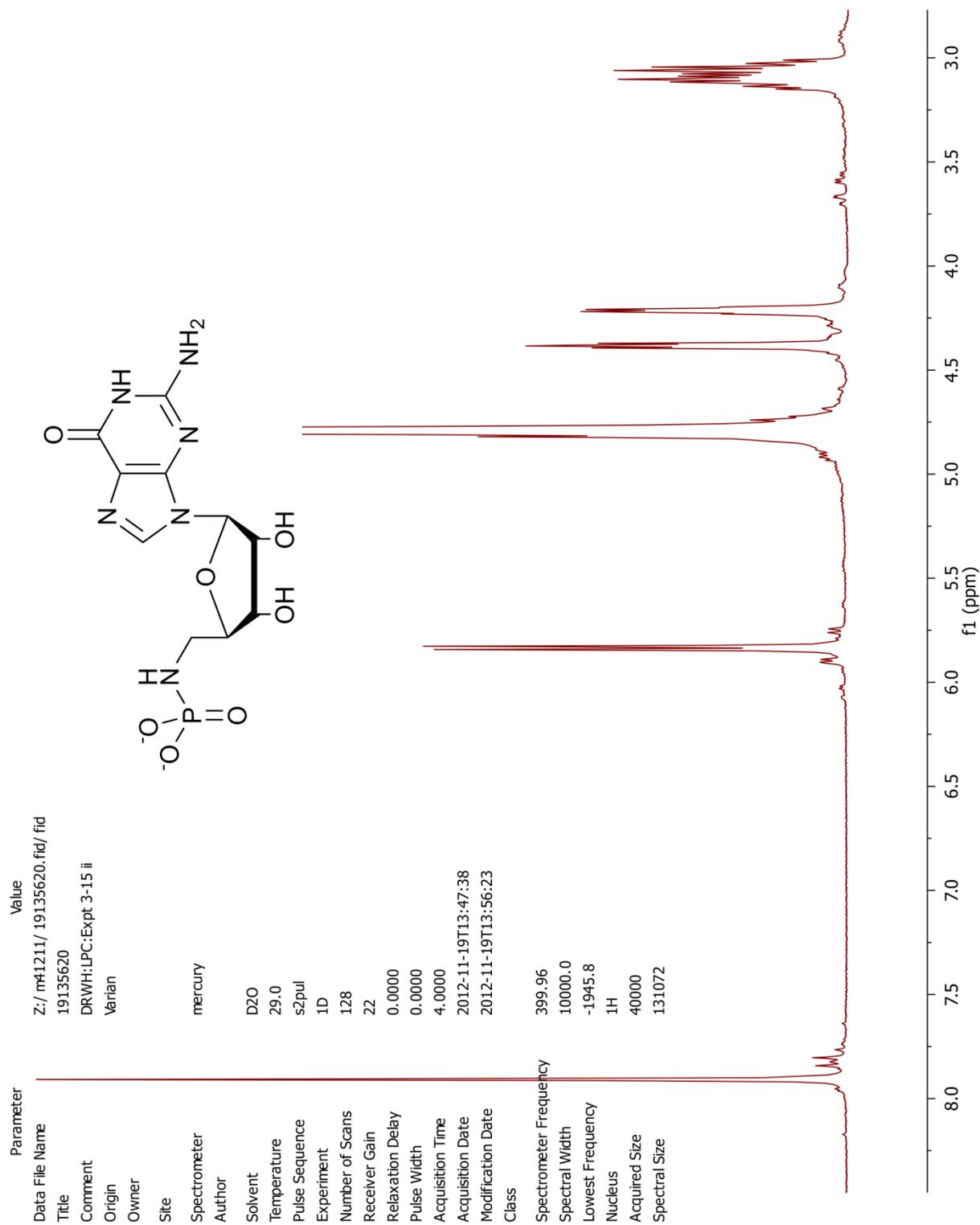


5'-Amino-5'-deoxyguanosine Phosphorylation with POCl₃, pH 11.5, ³¹P NMR Spectrum

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Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	36
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2012-11-19T11:04:23
Modification Date	2012-11-19T11:28:55
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Lowest Frequency	-16525.0
Nucleus	31P
Acquired Size	64000
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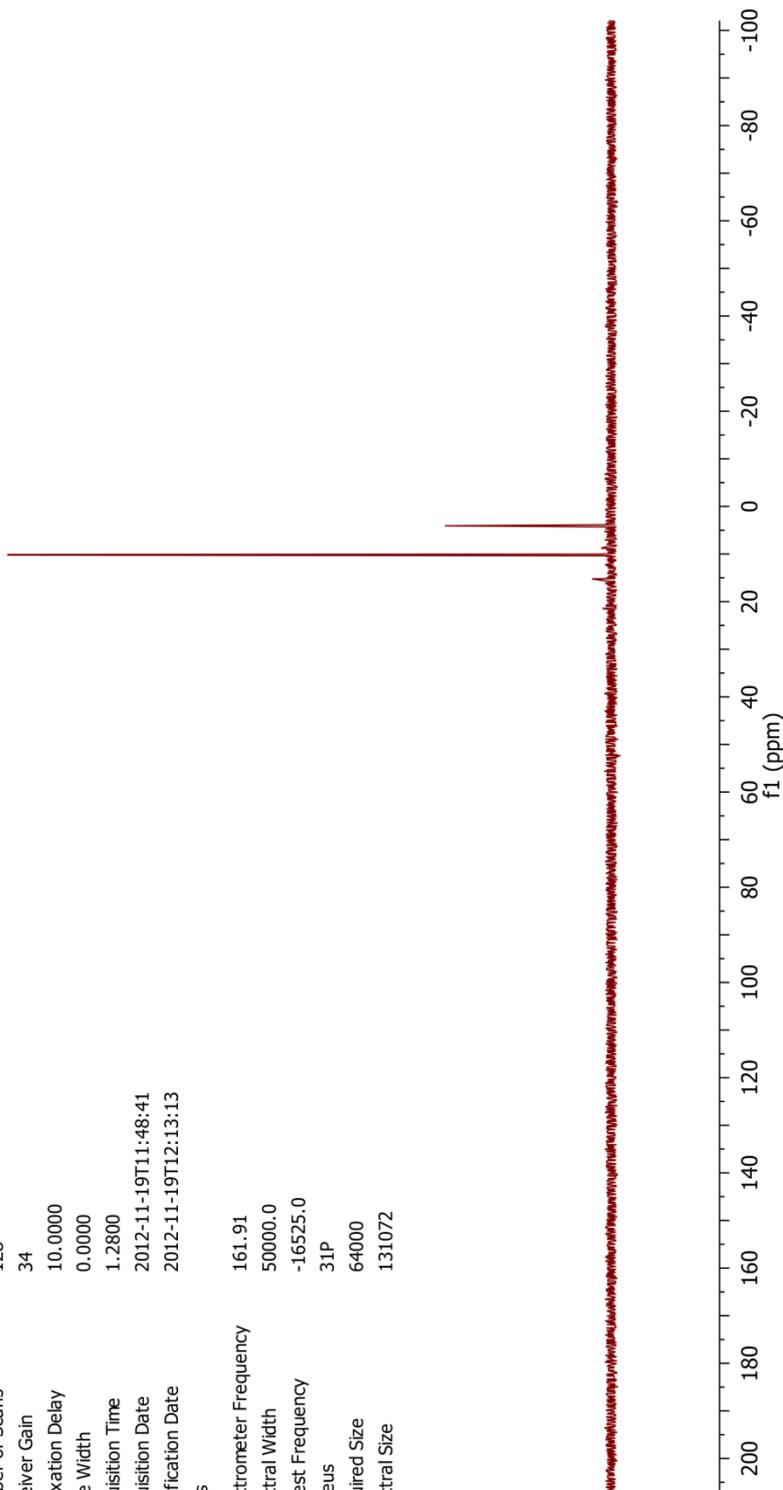
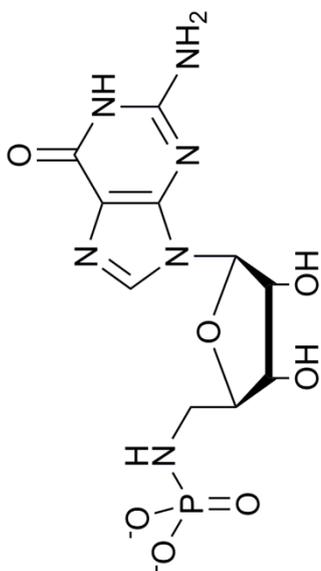


5'-Amino-5'-deoxyguanosine Phosphorylation with POCl₃, pH 12, ¹H NMR Spectrum

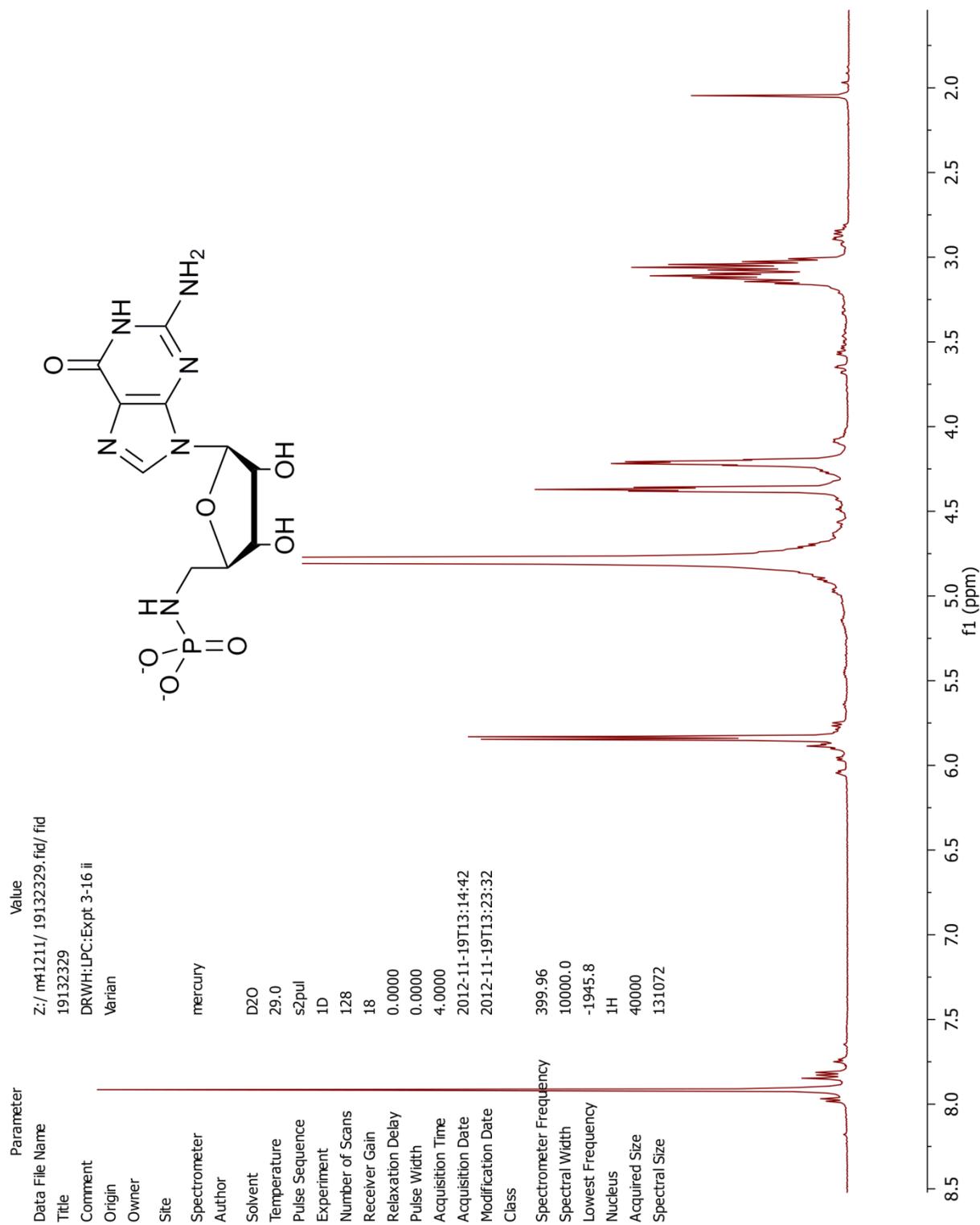


5'-Amino-5'-deoxyguanosine Phosphorylation with POCl_3 , pH 12, ^{31}P NMR Spectrum

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Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	34
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2012-11-19T11:48:41
Modification Date	2012-11-19T12:13:13
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Spectral Width	50000.0
Lowest Frequency	-16525.0
Nucleus	31P
Acquired Size	64000
Spectral Size	131072

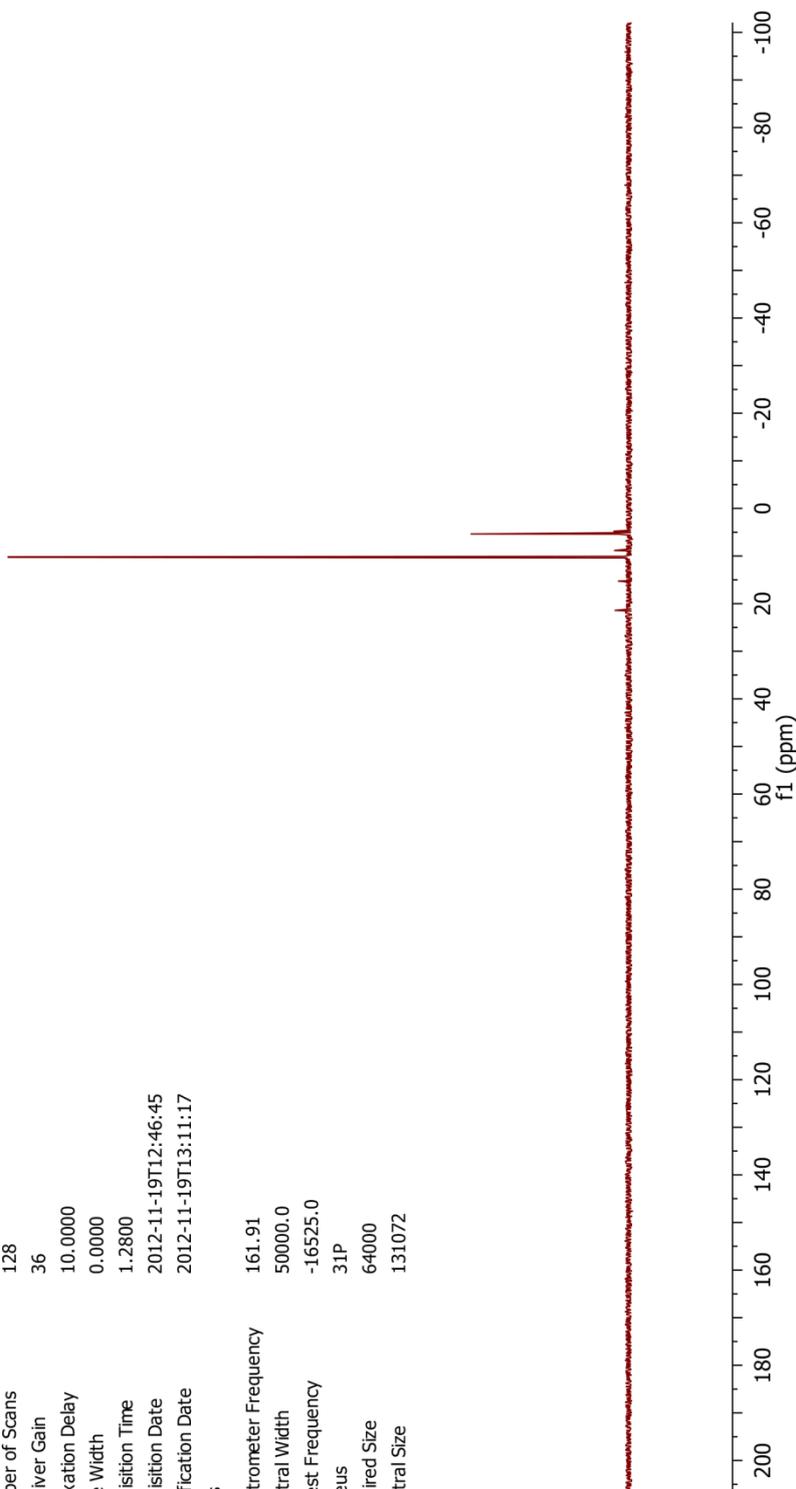
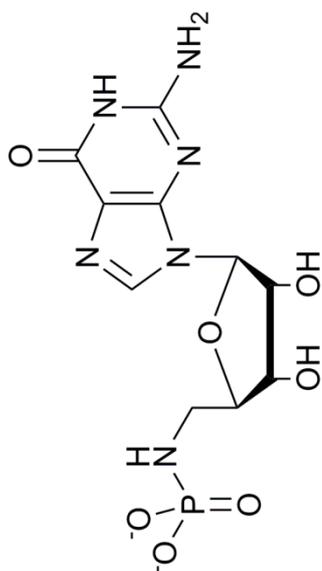


5'-Amino-5'-deoxyguanosine Phosphorylation with POCl₃, pH 12.5, ¹H NMR Spectrum

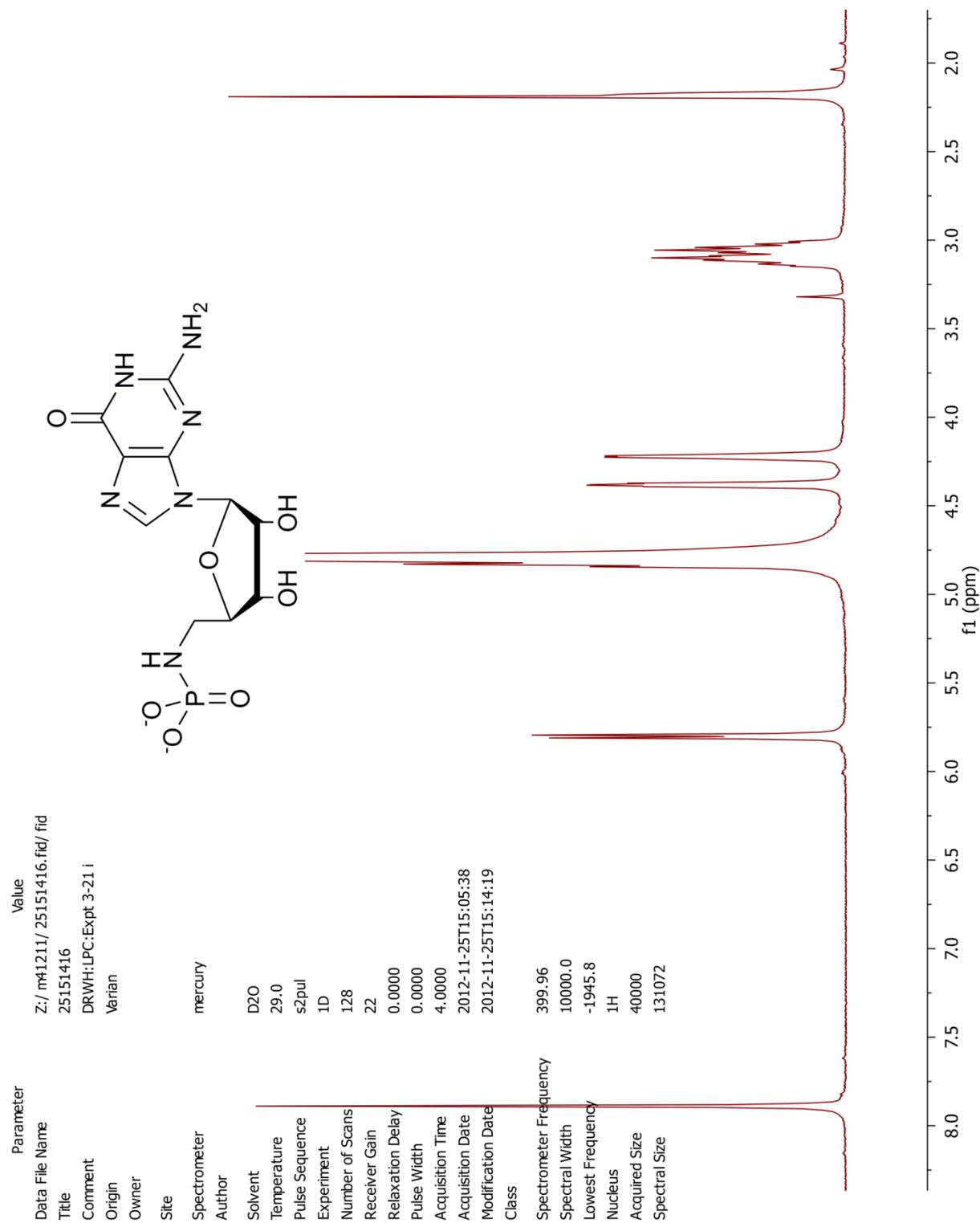


5'-Amino-5'-deoxyguanosine Phosphorylation with POCl₃, pH 12.5, ³¹P NMR Spectrum

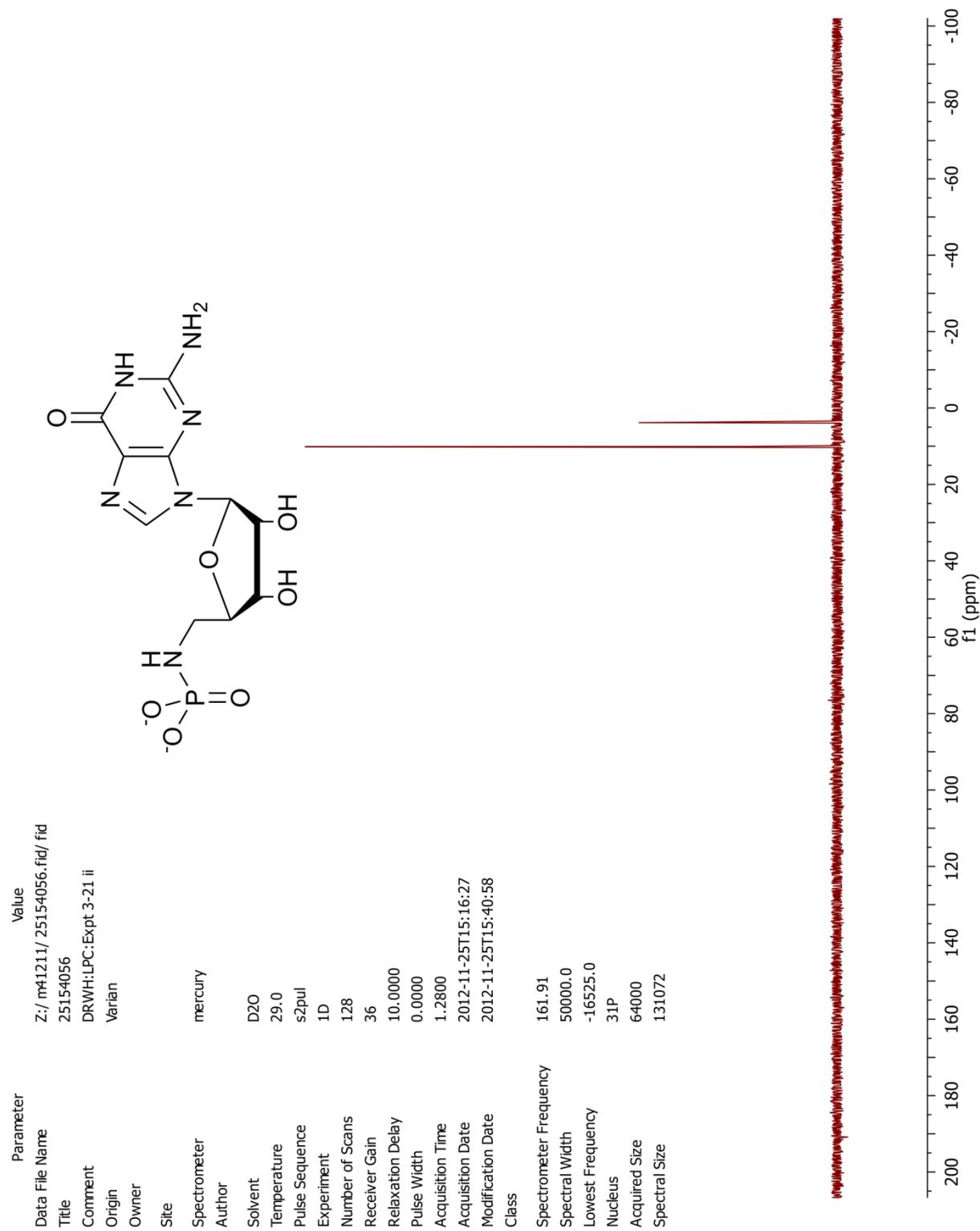
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Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	36
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2012-11-19T12:46:45
Modification Date	2012-11-19T13:11:17
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Nucleus	31P
Acquired Size	64000
Spectral Size	131072



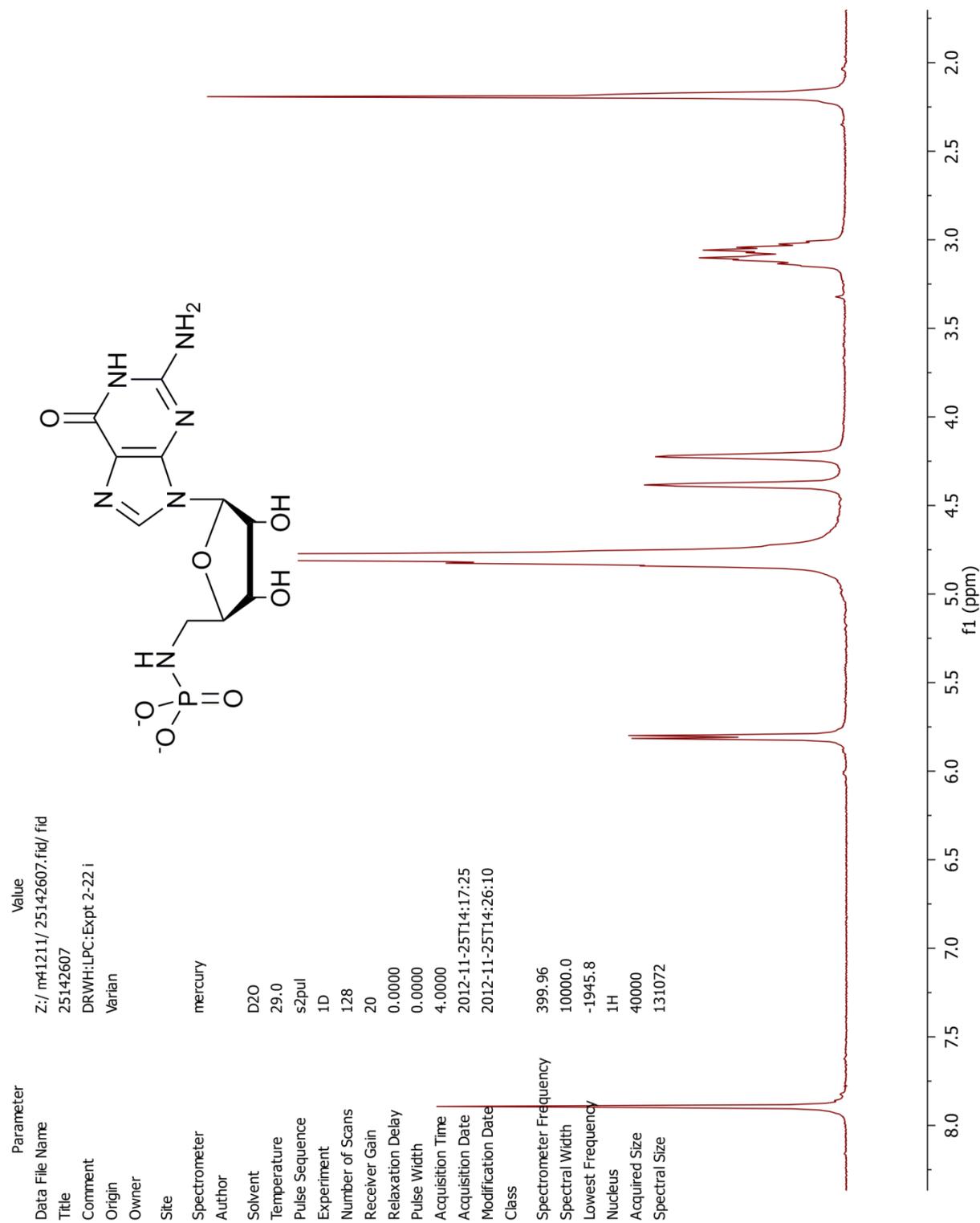
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPOCl_2 , pH 11, ^1H NMR Spectrum



5'-Amino-5'-deoxyguanosine Phosphorylation with KOPOCl_2 , pH 11, ^{31}P NMR Spectrum

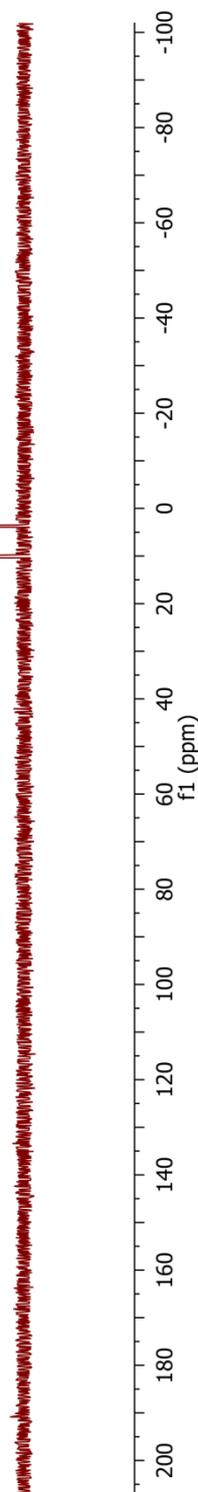
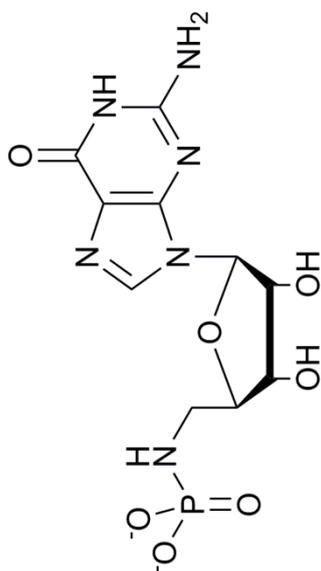


5'-Amino-5'-deoxyguanosine Phosphorylation with KPOCl_2 , pH 11.5, ^1H NMR Spectrum

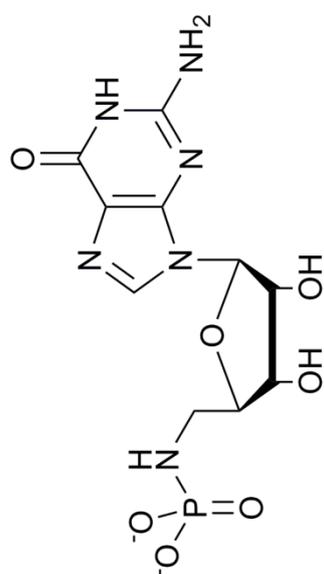


5'-Amino-5'-deoxyguanosine Phosphorylation with KPOCl_2 , pH 11.5, ^{31}P NMR Spectrum

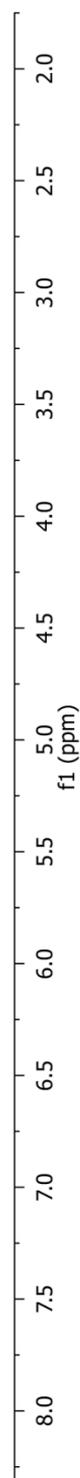
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Author	
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Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	36
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Acquisition Date	2012-11-25T14:33:15
Modification Date	2012-11-25T14:57:47
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Lowest Frequency	-16525.0
Nucleus	31P
Acquired Size	64000
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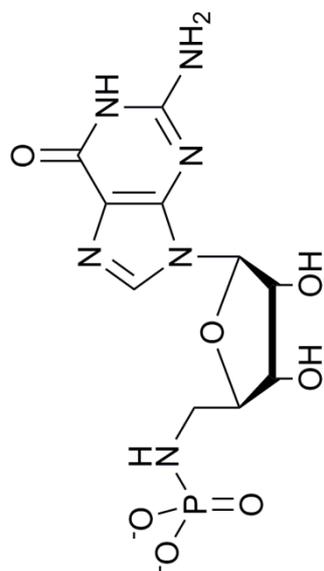
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPOCl_2 , pH 12, ^1H NMR Spectrum



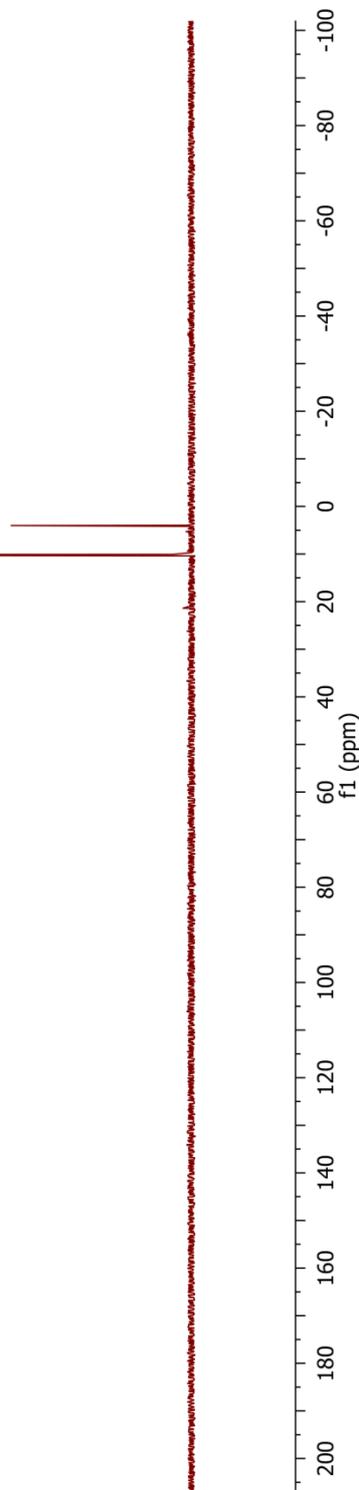
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Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	22
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Pulse Width	0.0000
Acquisition Time	4.0000
Acquisition Date	2012-11-25T13:37:09
Modification Date	2012-11-25T13:45:58
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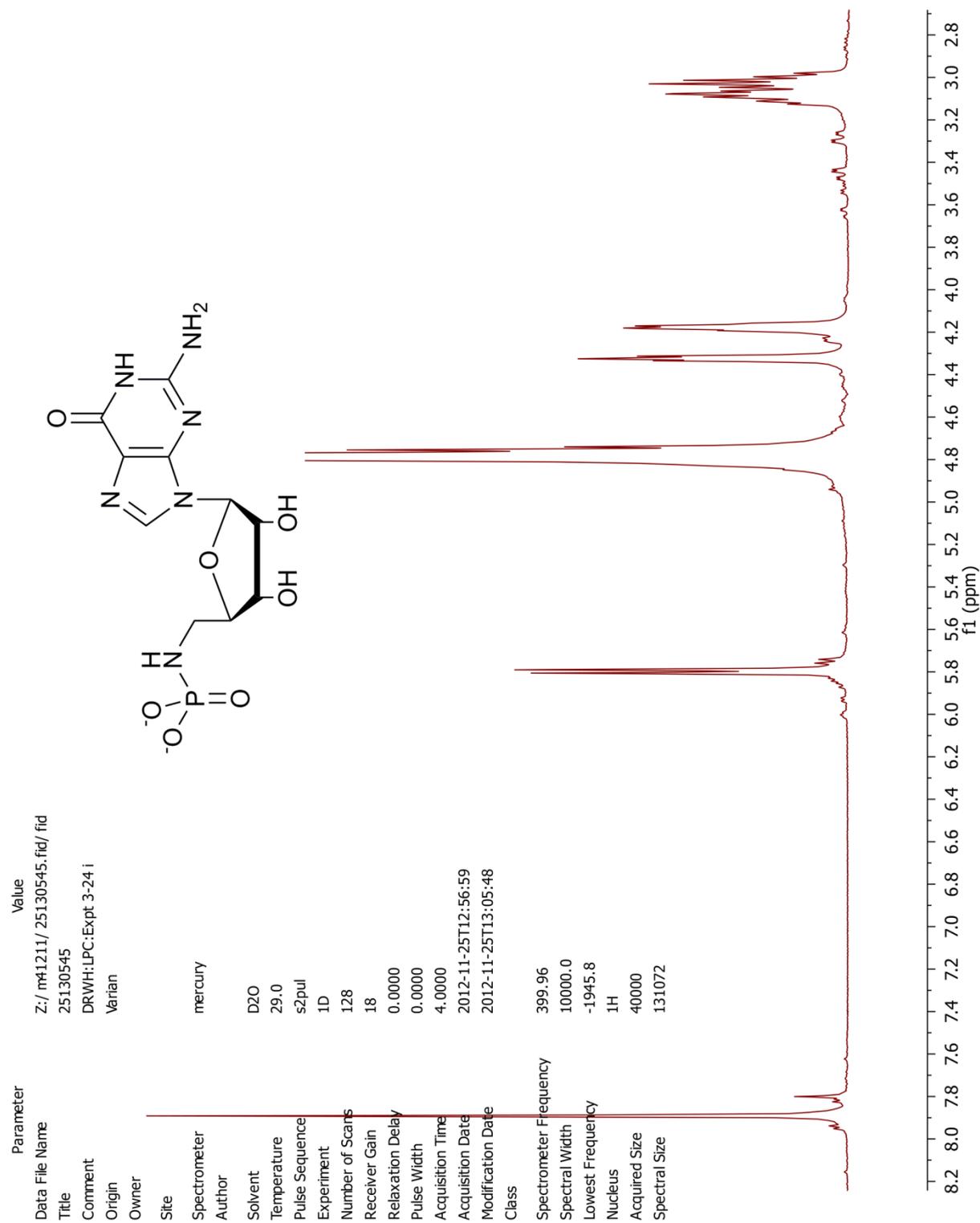
5'-Amino-5'-deoxyguanosine Phosphorylation with KPOCl_2 , pH 12, ^{31}P NMR Spectrum



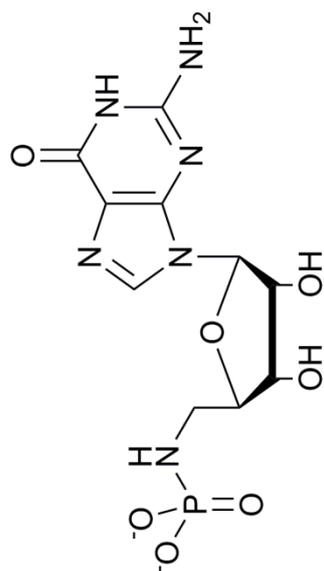
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Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	36
Relaxation Delay	10.0000
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Acquisition Date	2012-11-25T13:48:19
Modification Date	2012-11-25T14:12:50
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Nucleus	31P
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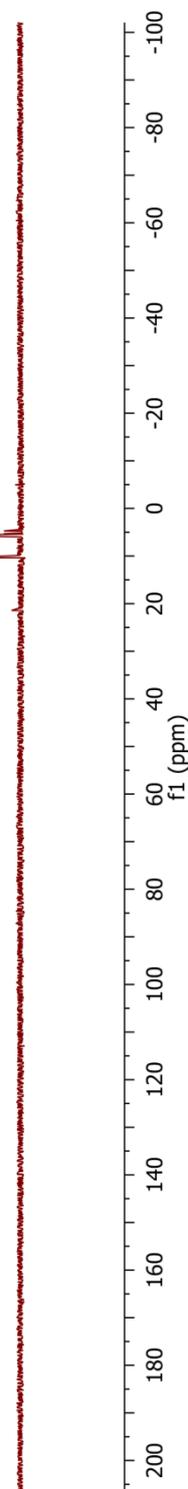
5'-Amino-5'-deoxyguanosine Phosphorylation with KPOCl_2 , pH 12.5, ^1H NMR Spectrum



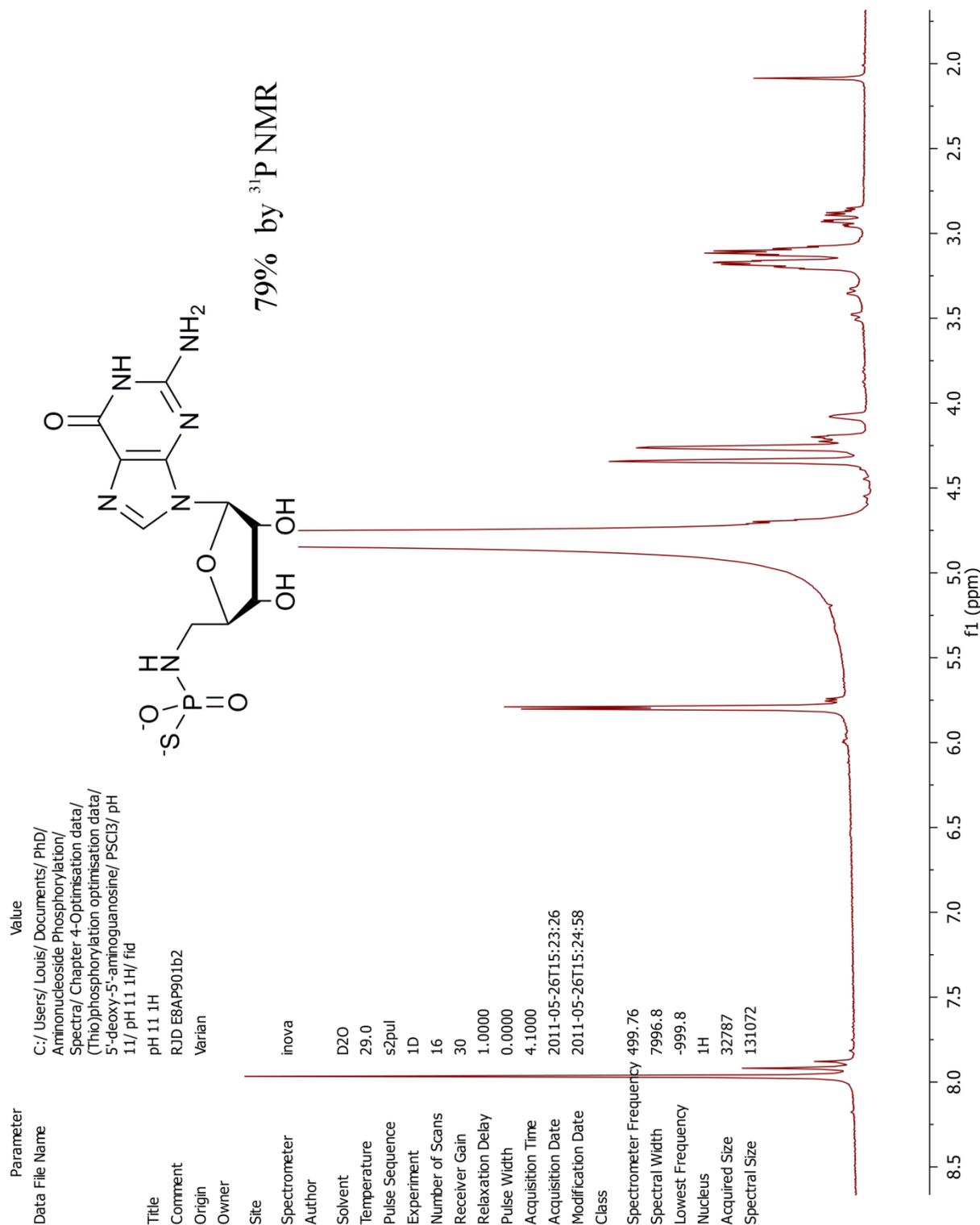
5'-Amino-5'-deoxyguanosine Phosphorylation with KPOCl_2 , pH 12.5, ^{31}P NMR Spectrum



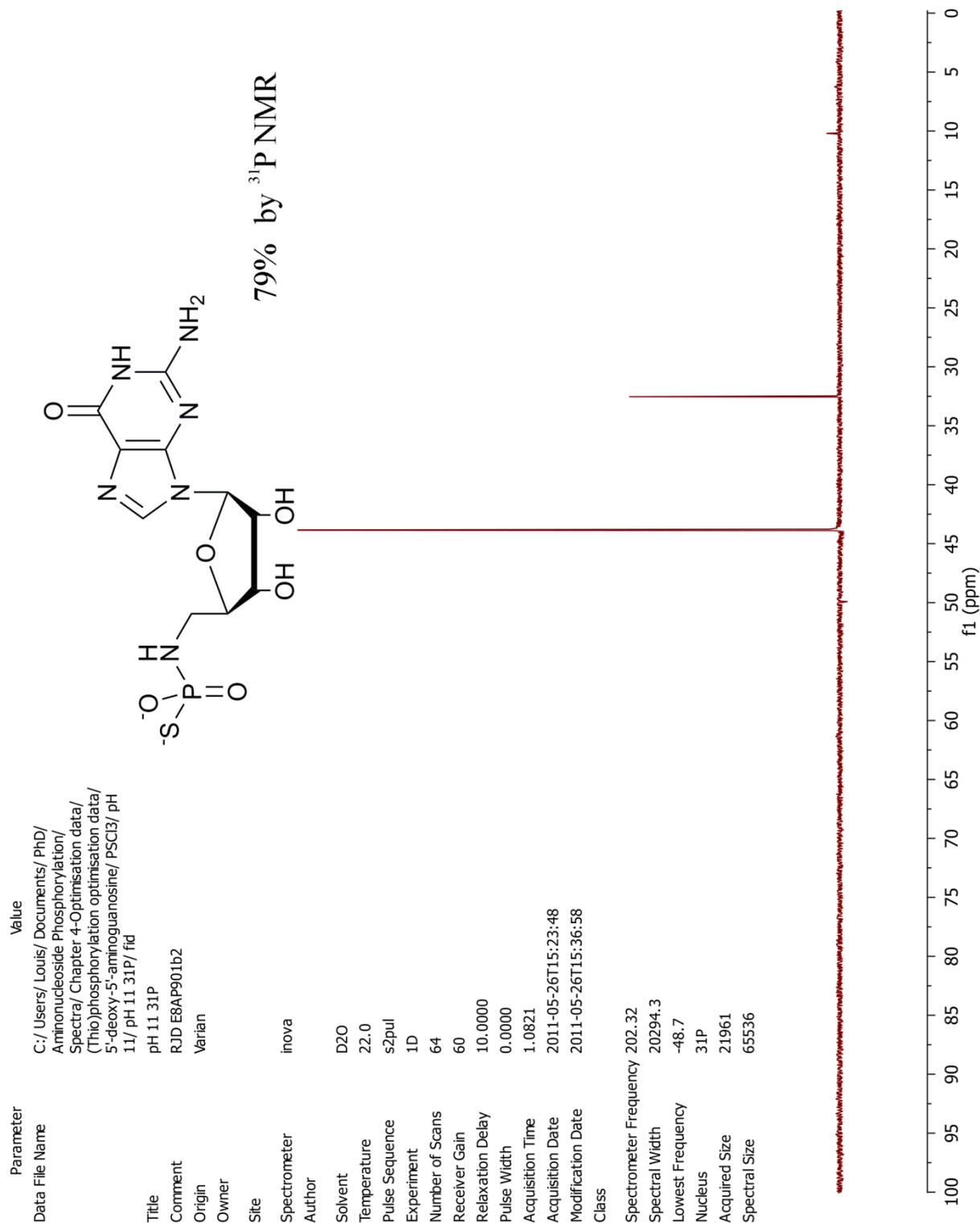
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Author	
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Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	36
Relaxation Delay	10.0000
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Nucleus	31P
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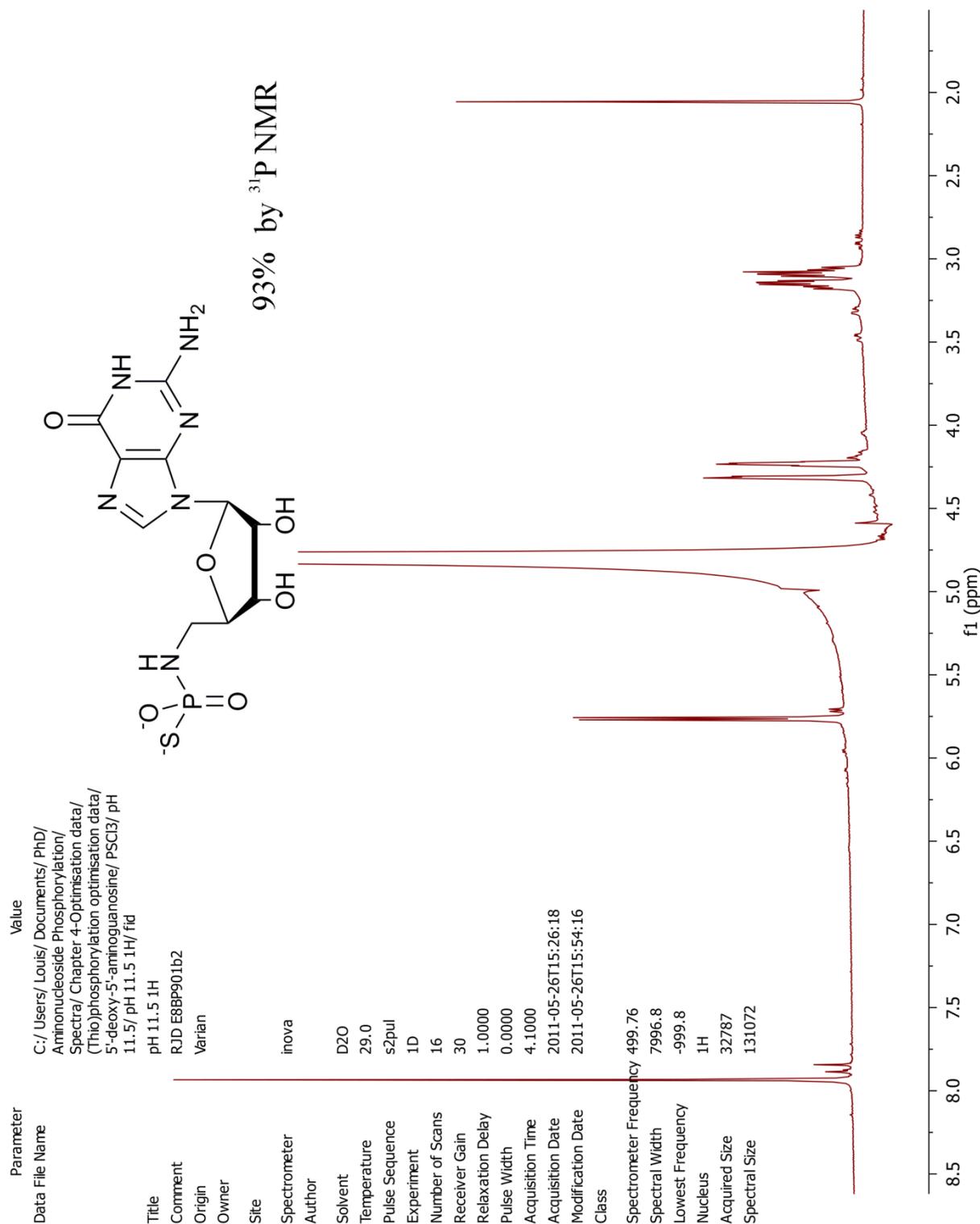
5'-Amino-5'-deoxyguanosine Phosphorylation with PSCl_3 , pH 11, ^1H NMR Spectrum



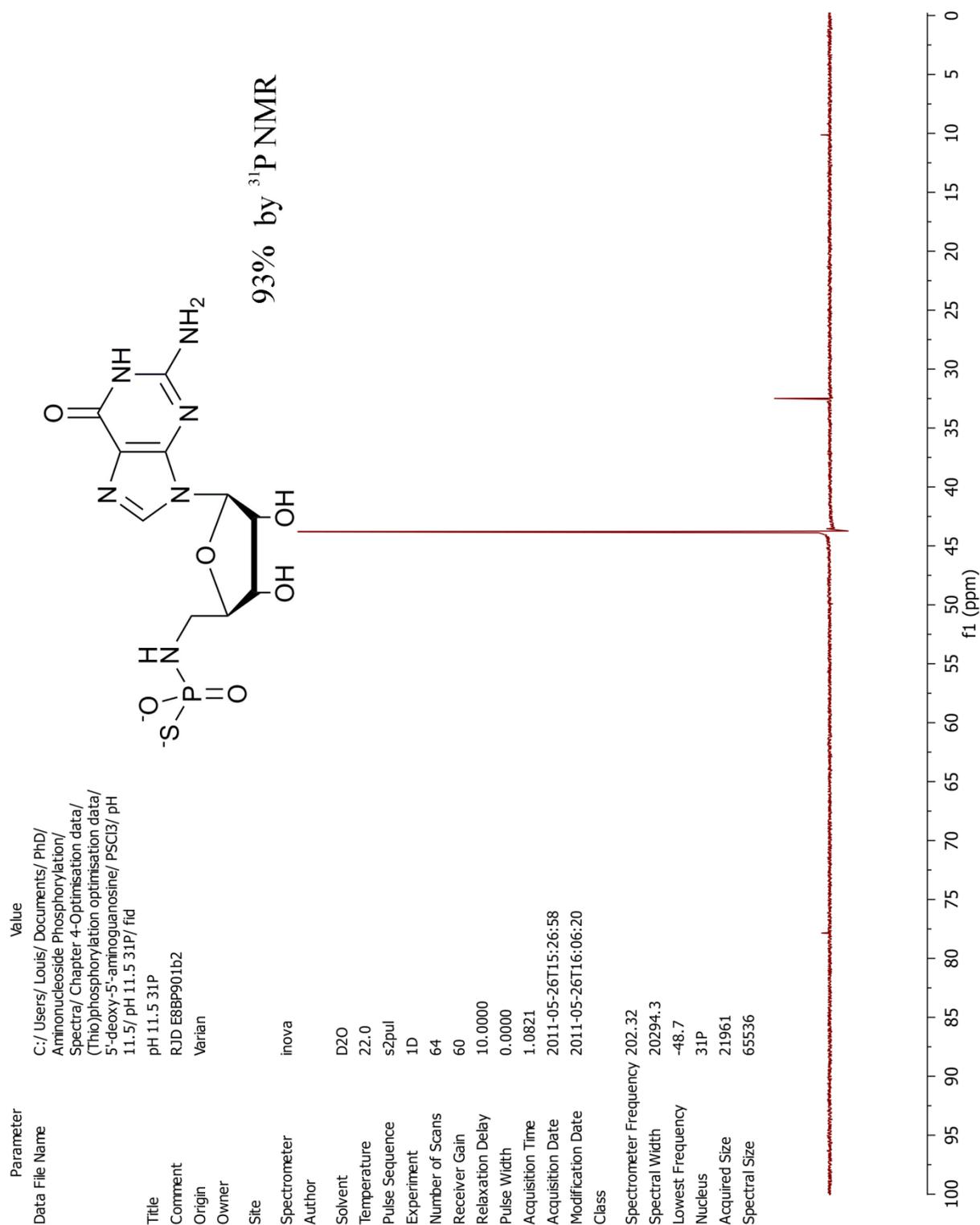
5'-Amino-5'-deoxyguanosine Phosphorylation with PSCl_3 , pH 11, ^{31}P NMR Spectrum



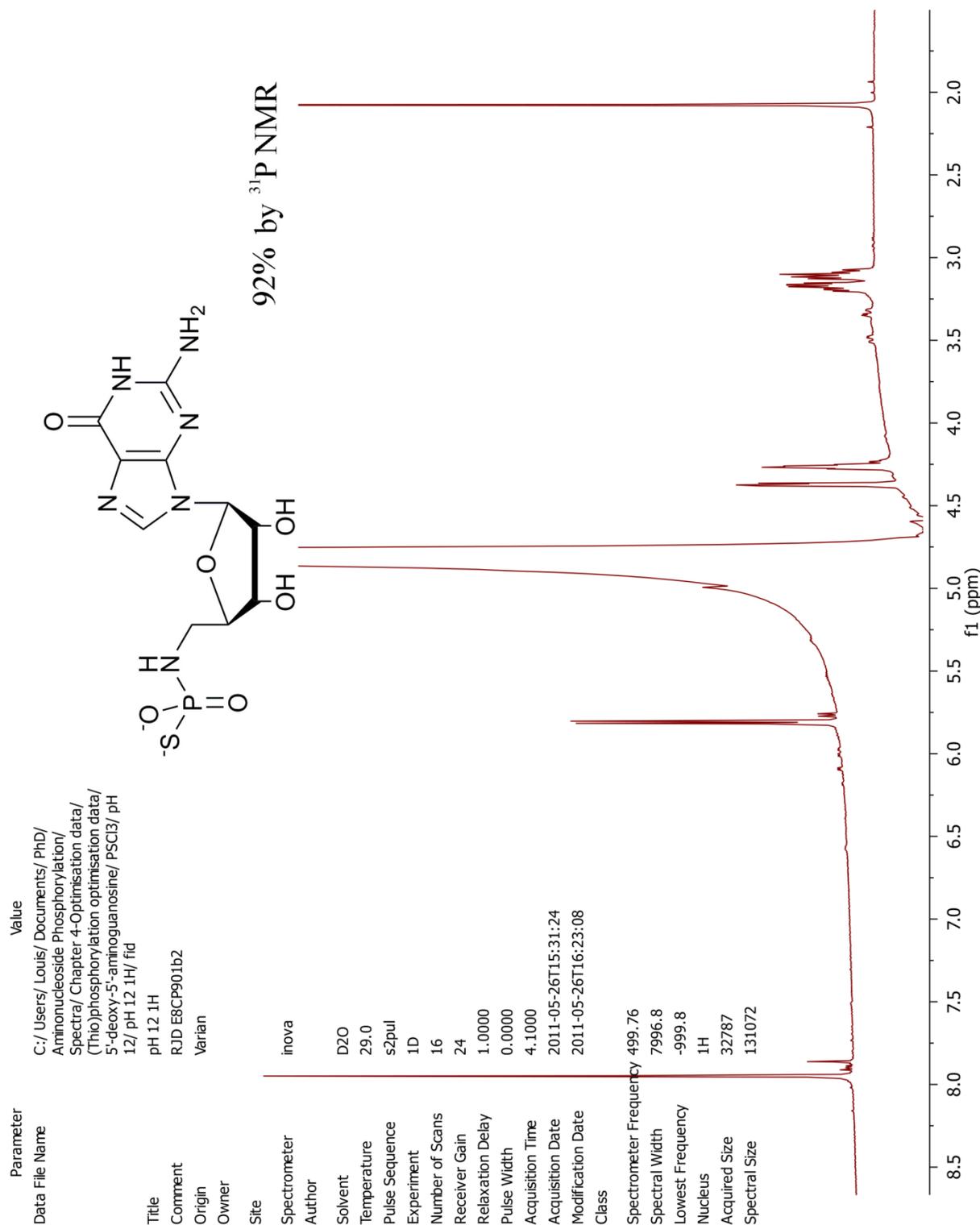
5'-Amino-5'-deoxyguanosine Phosphorylation with PSCl_3 , pH 11.5, ^1H NMR Spectrum



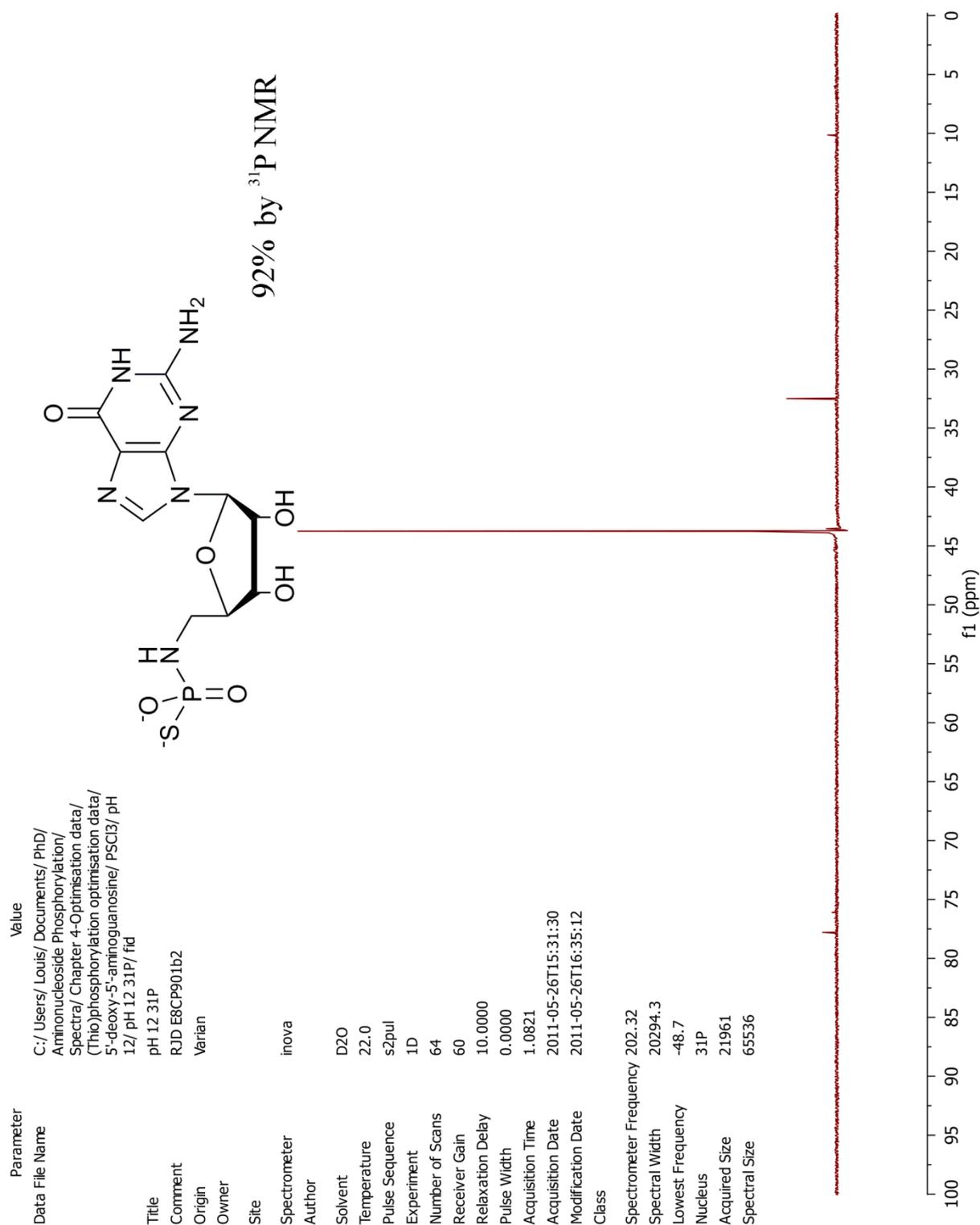
5'-Amino-5'-deoxyguanosine Phosphorylation with PSCl_3 , pH 11.5, ^{31}P NMR Spectrum



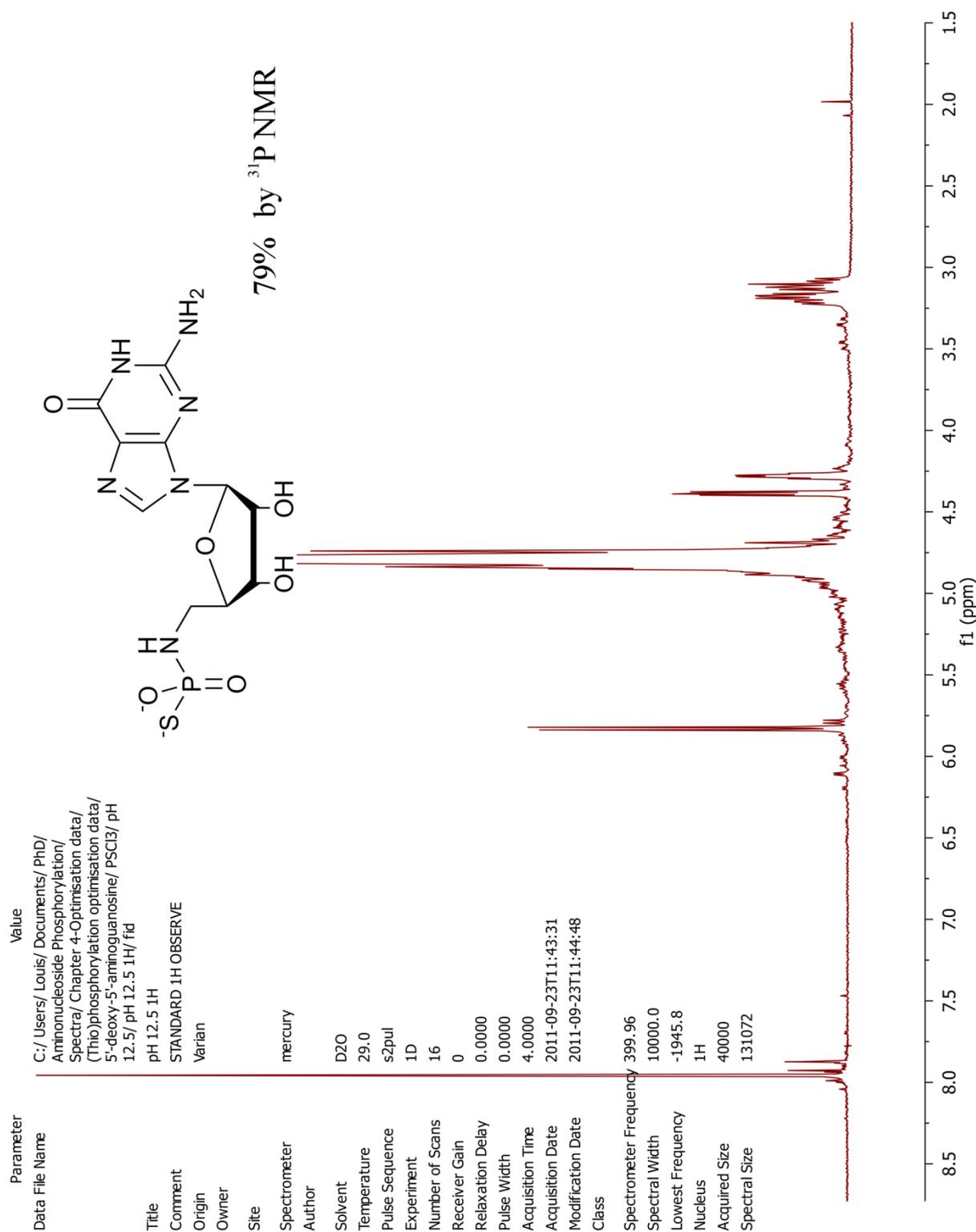
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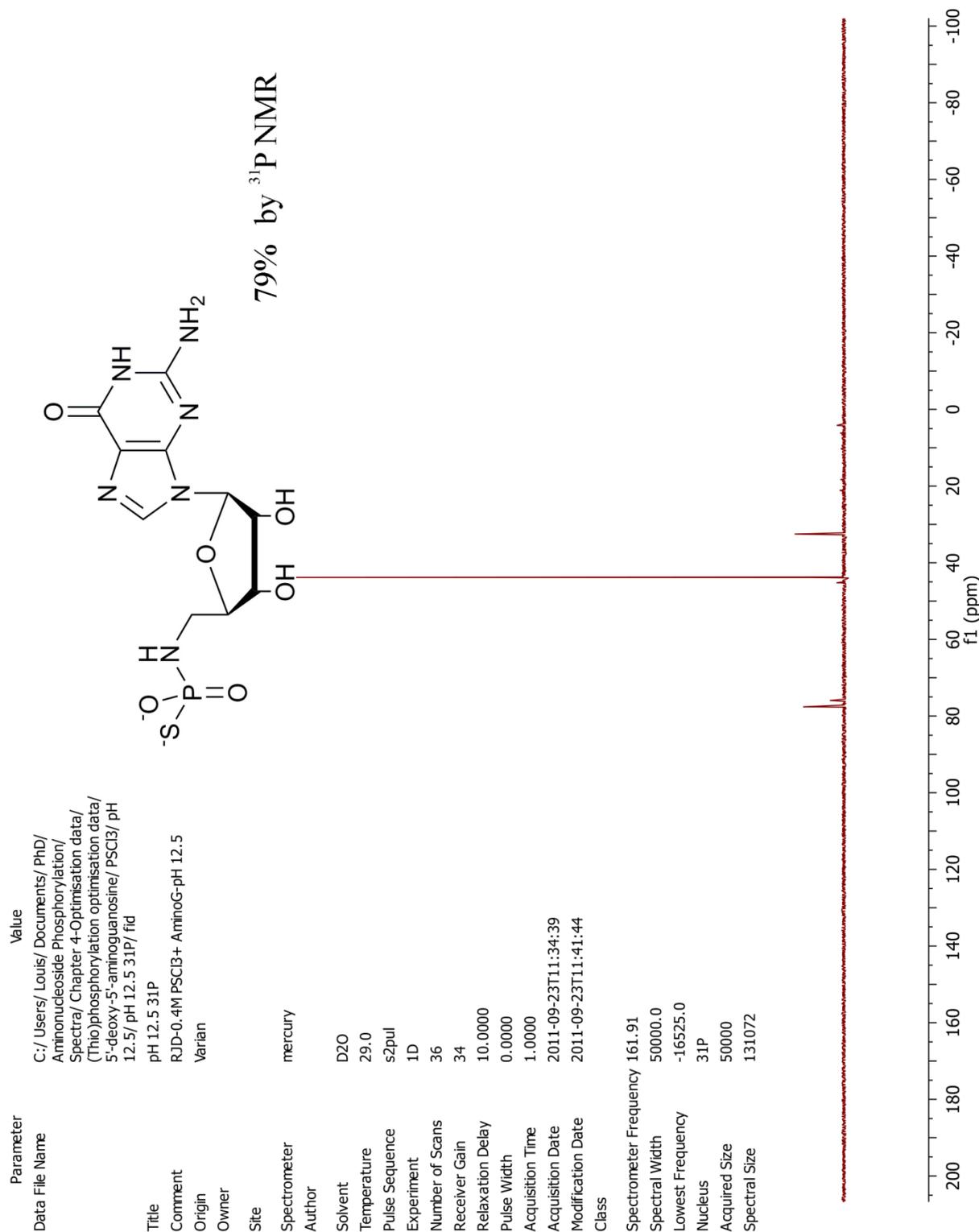
5'-Amino-5'-deoxyguanosine Phosphorylation with PSCl_3 , pH 12, ^{31}P NMR Spectrum



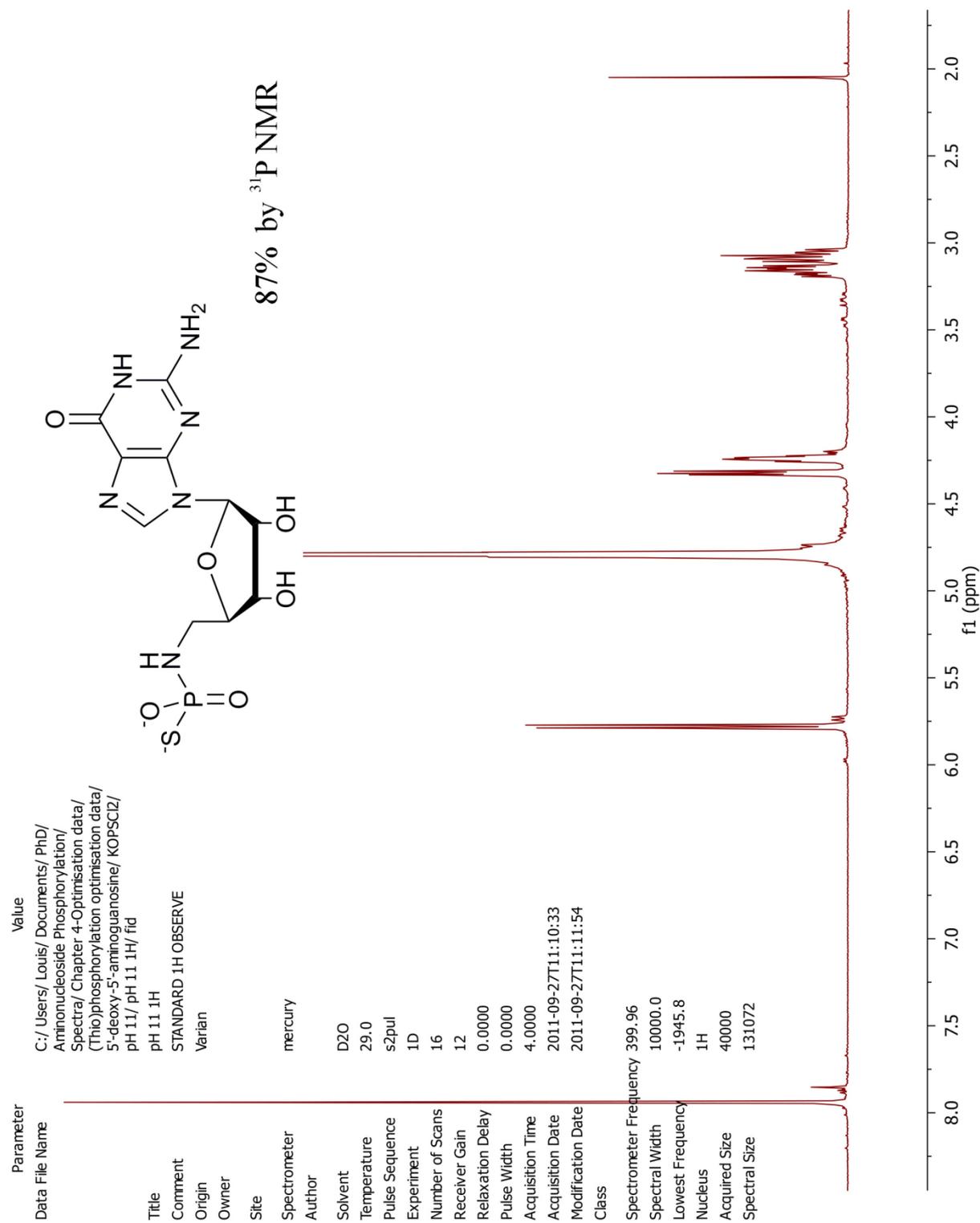
5'-Amino-5'-deoxyguanosine Phosphorylation with PSCl_3 , pH 12.5, ^1H NMR Spectrum



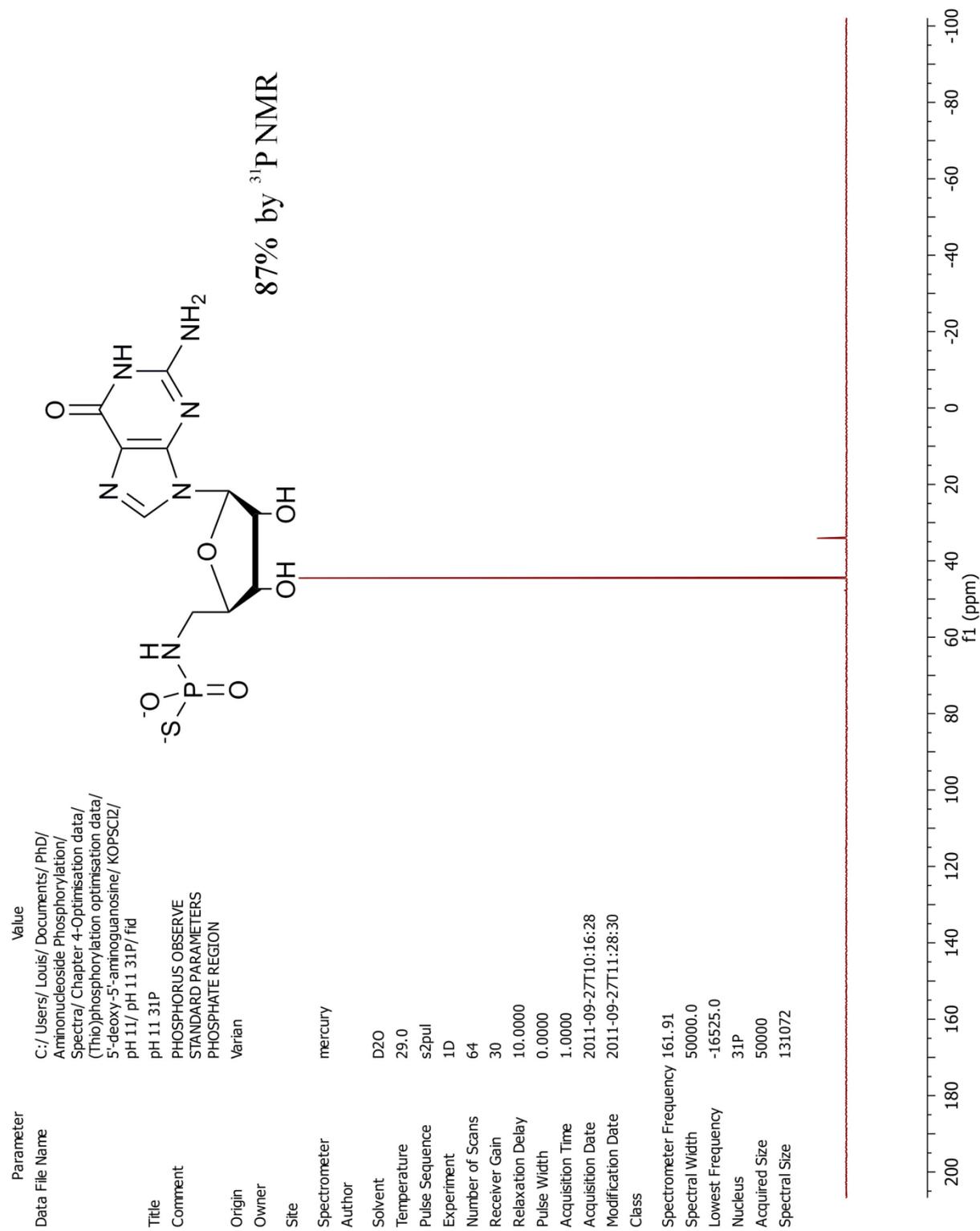
5'-Amino-5'-deoxyguanosine Phosphorylation with PSCl_3 , pH 12.5, ^{31}P NMR Spectrum



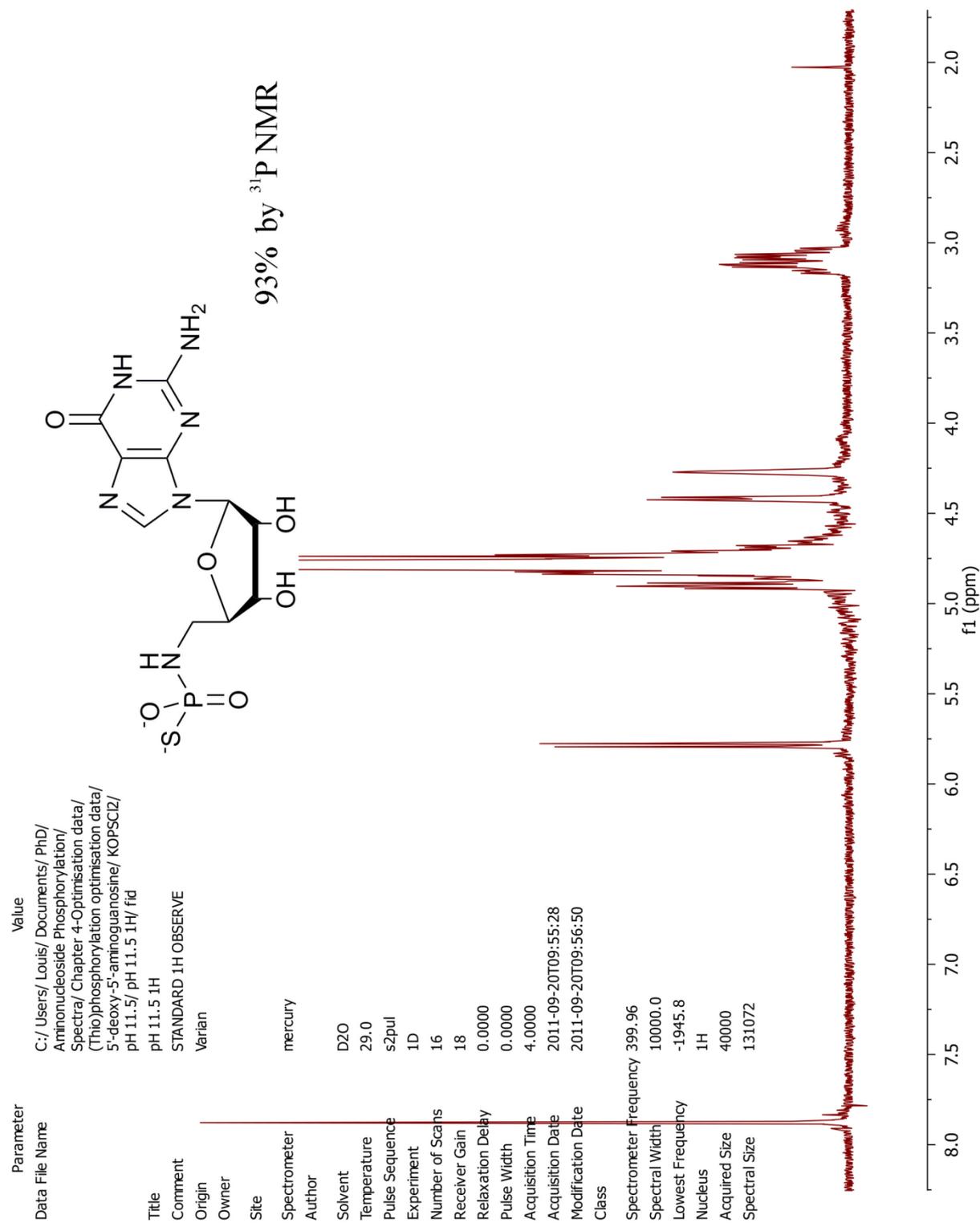
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPSCl₂, pH 11, ¹H NMR Spectrum



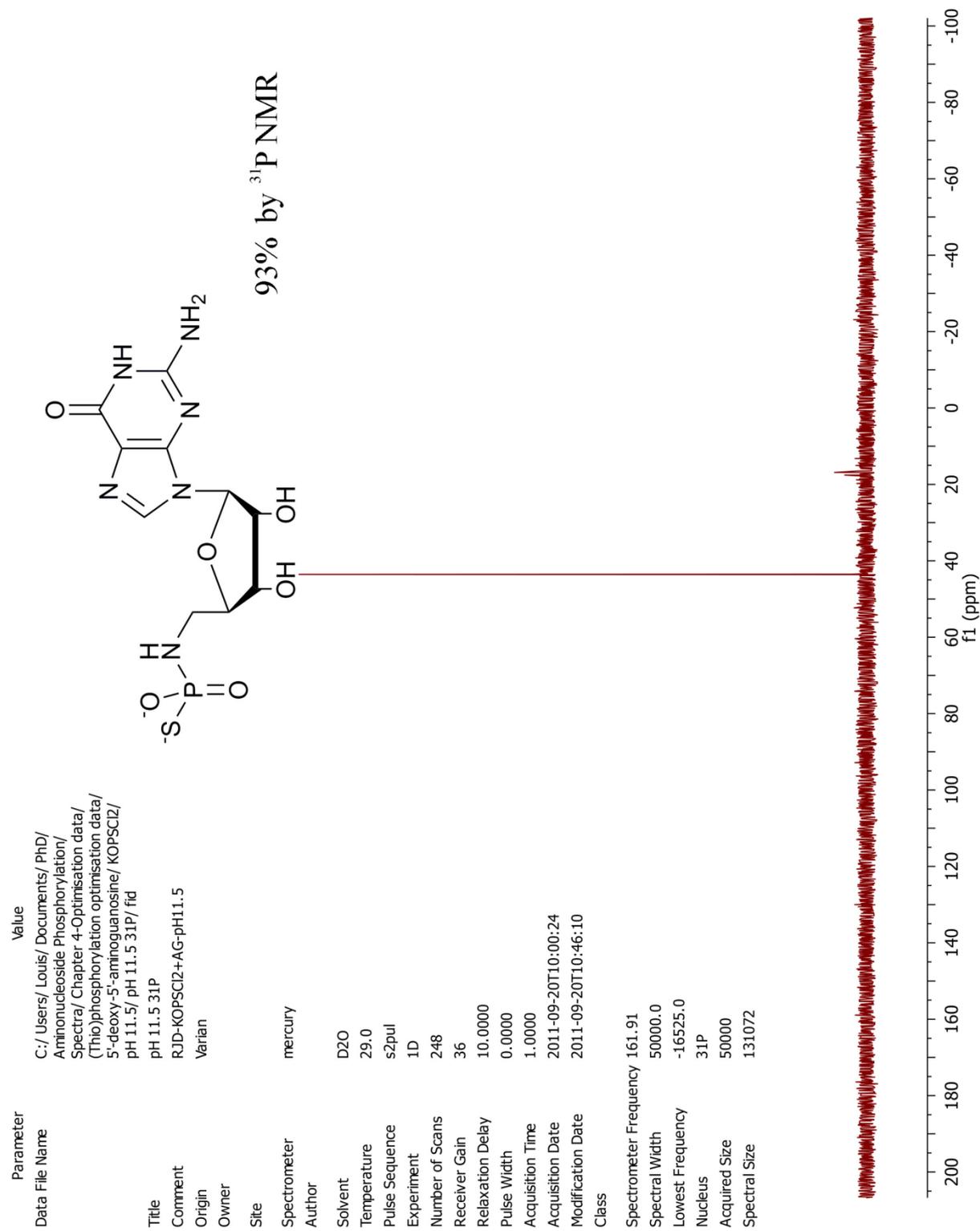
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPSCl₂, pH 11, ³¹P NMR Spectrum



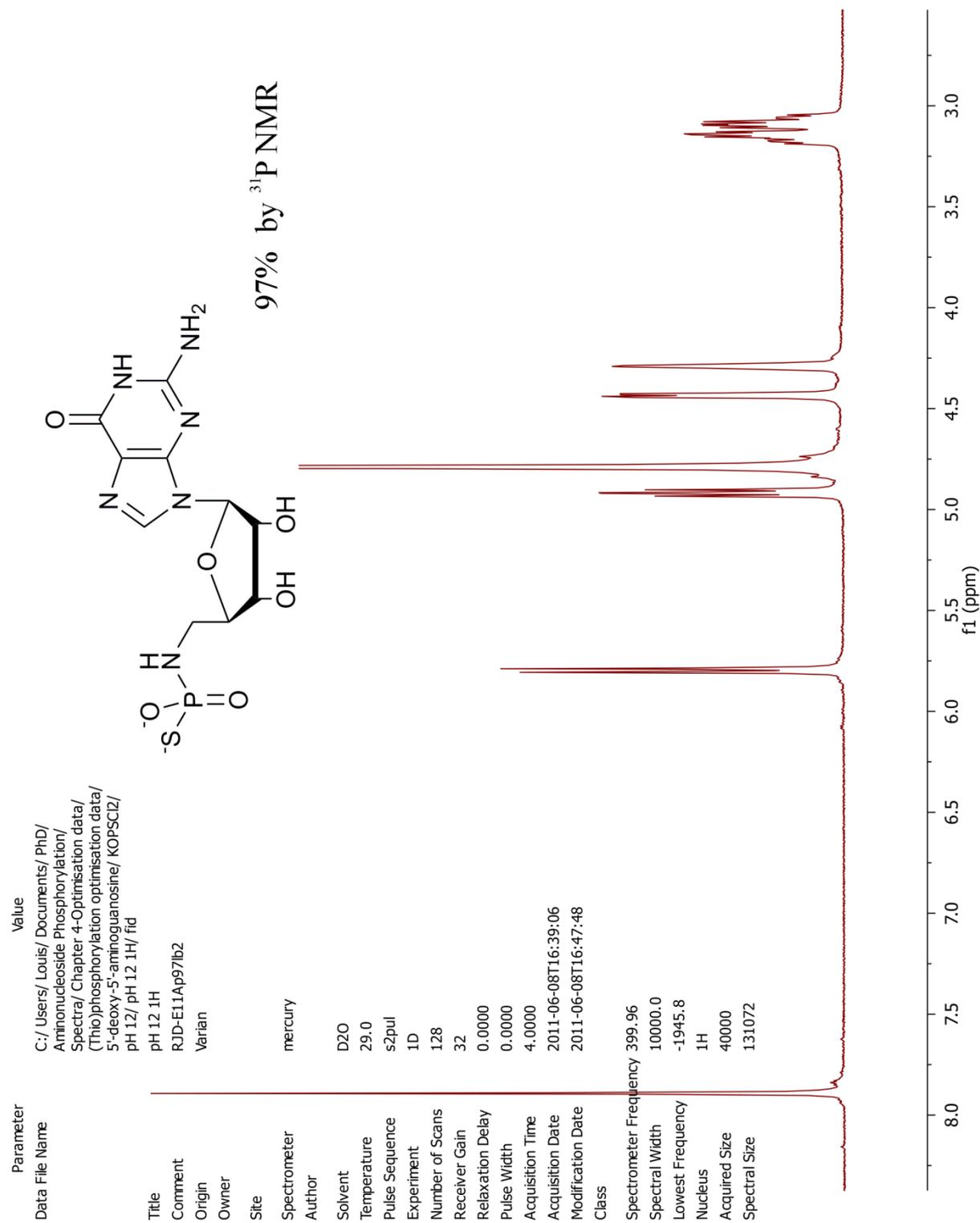
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPSCl₂, pH 11.5, ¹H NMR Spectrum



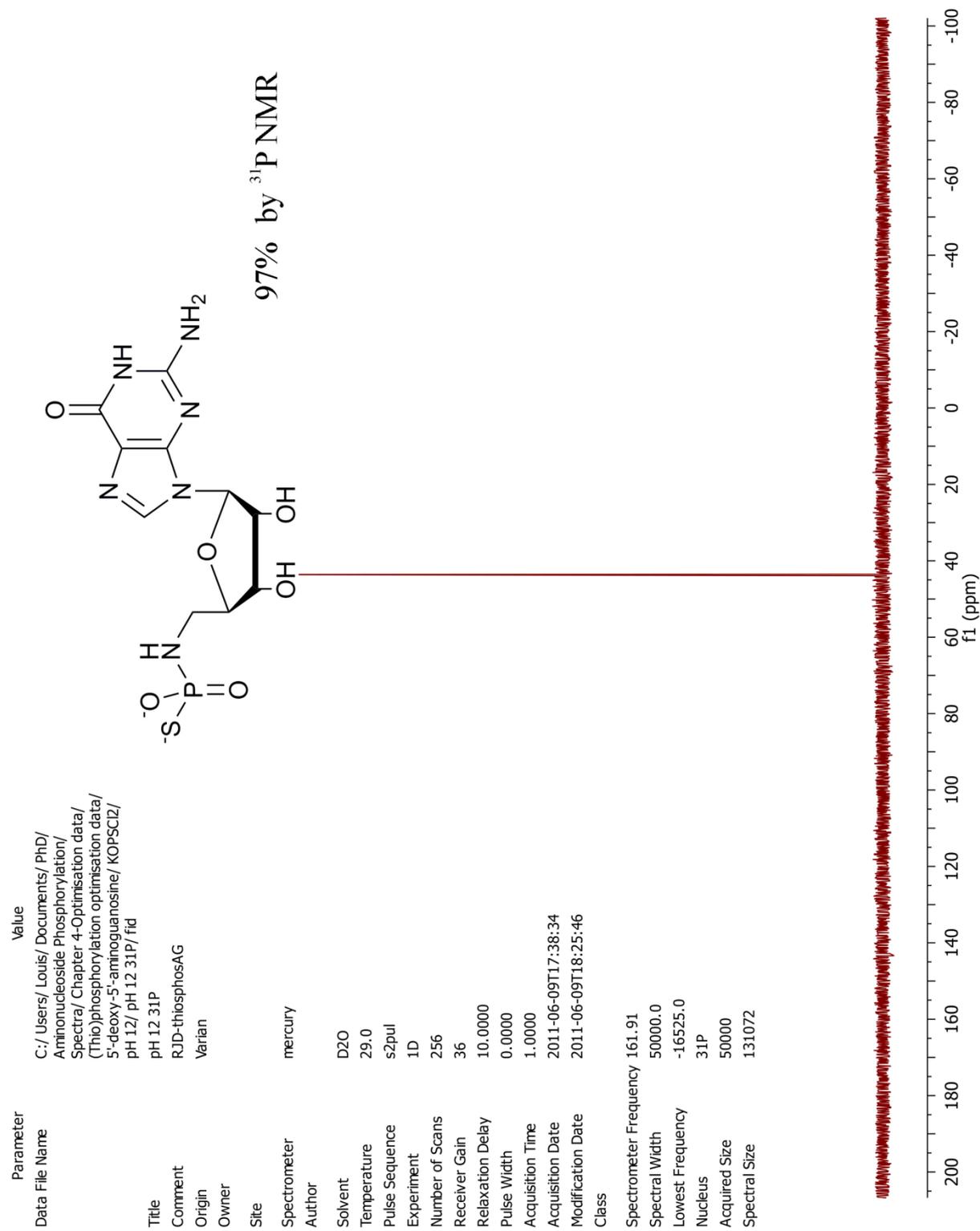
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPSCl₂, pH 11.5, ³¹P NMR Spectrum



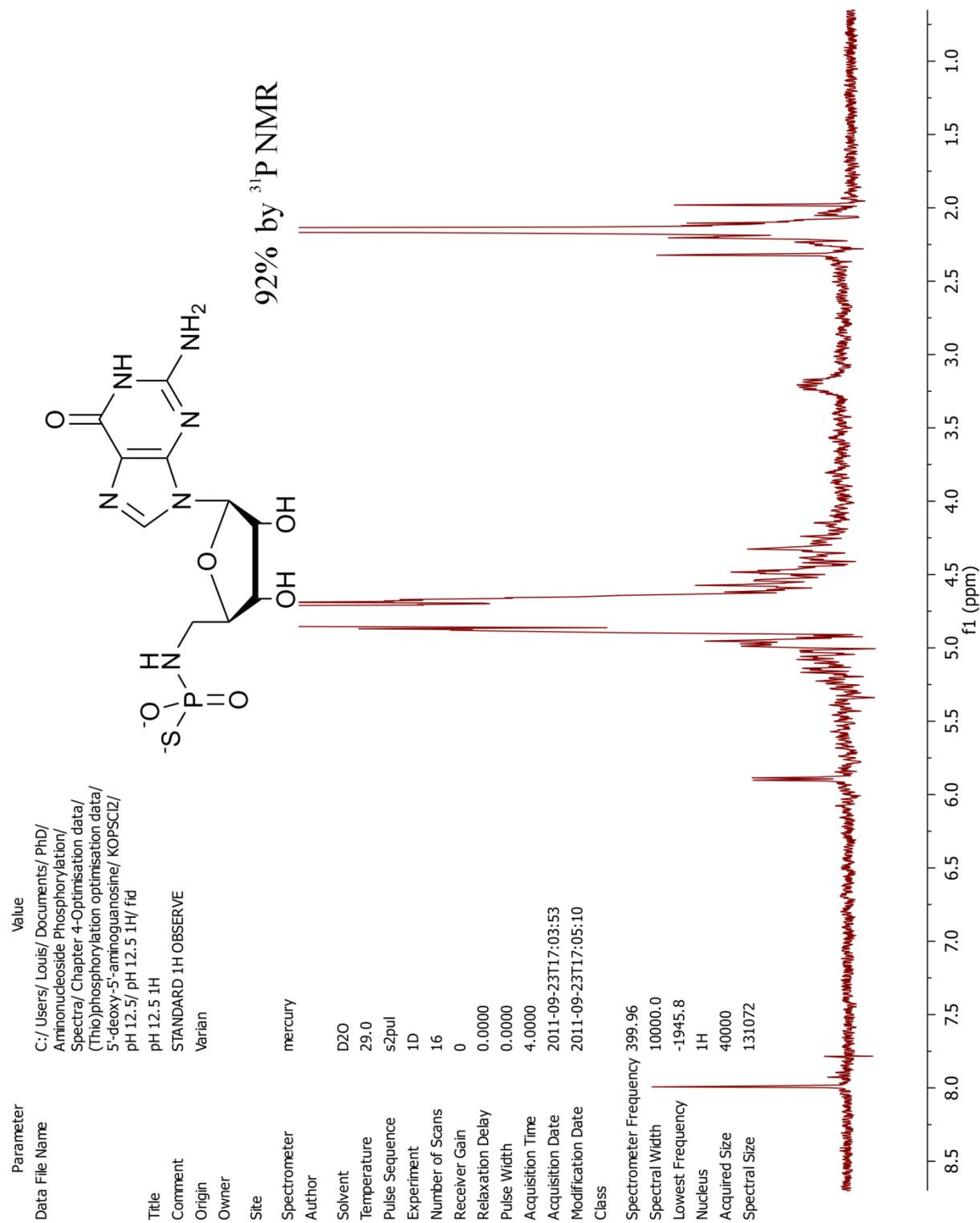
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPSCl₂, pH 12, ¹H NMR Spectrum



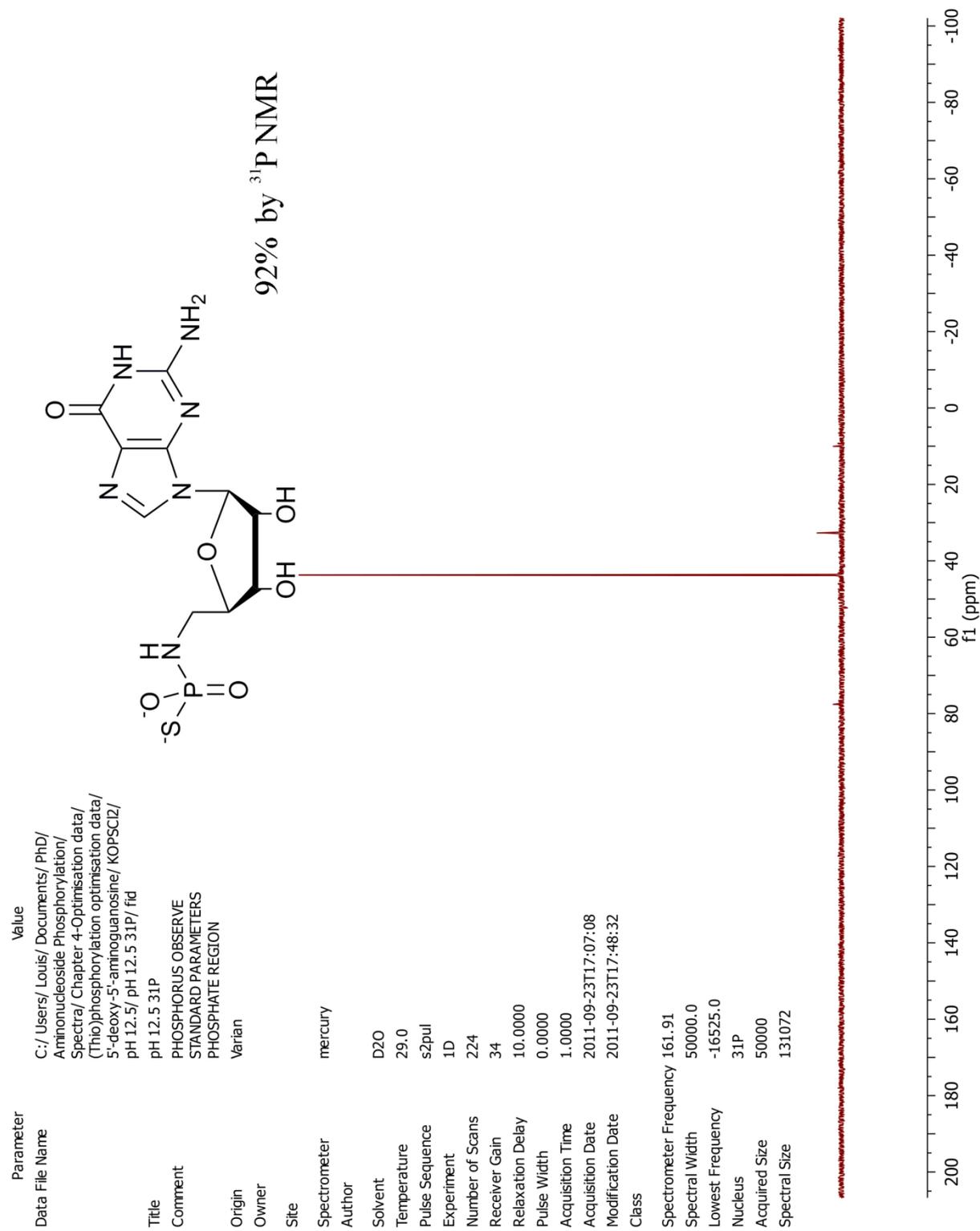
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPSCl₂, pH 12, ³¹P NMR Spectrum



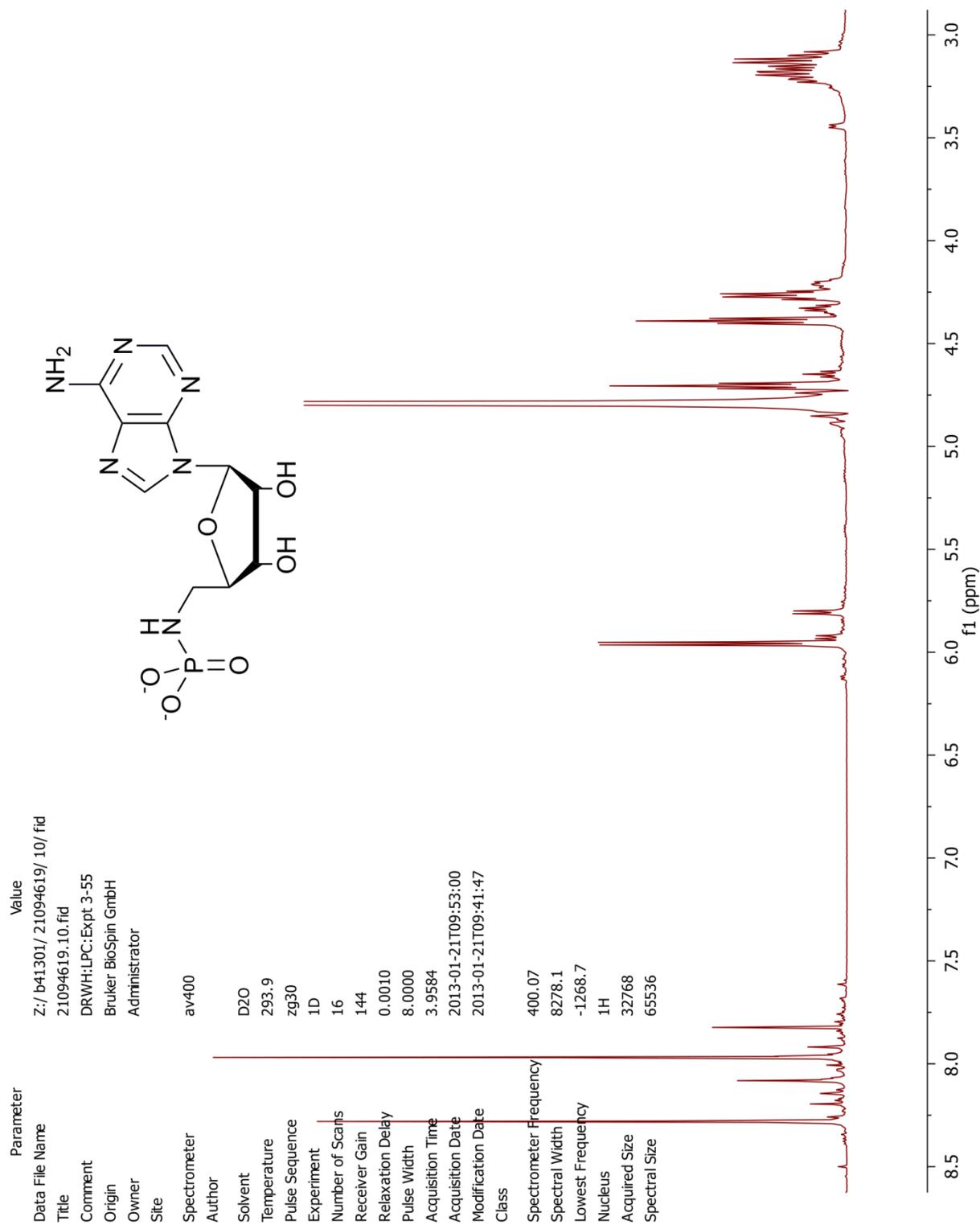
5'-Amino-5'-deoxyguanosine Phosphorylation with KOPSCl₂, pH 12.5, ¹H NMR Spectrum



5'-Amino-5'-deoxyguanosine Phosphorylation with KOPSCl₂, pH 12.5, ³¹P NMR Spectrum

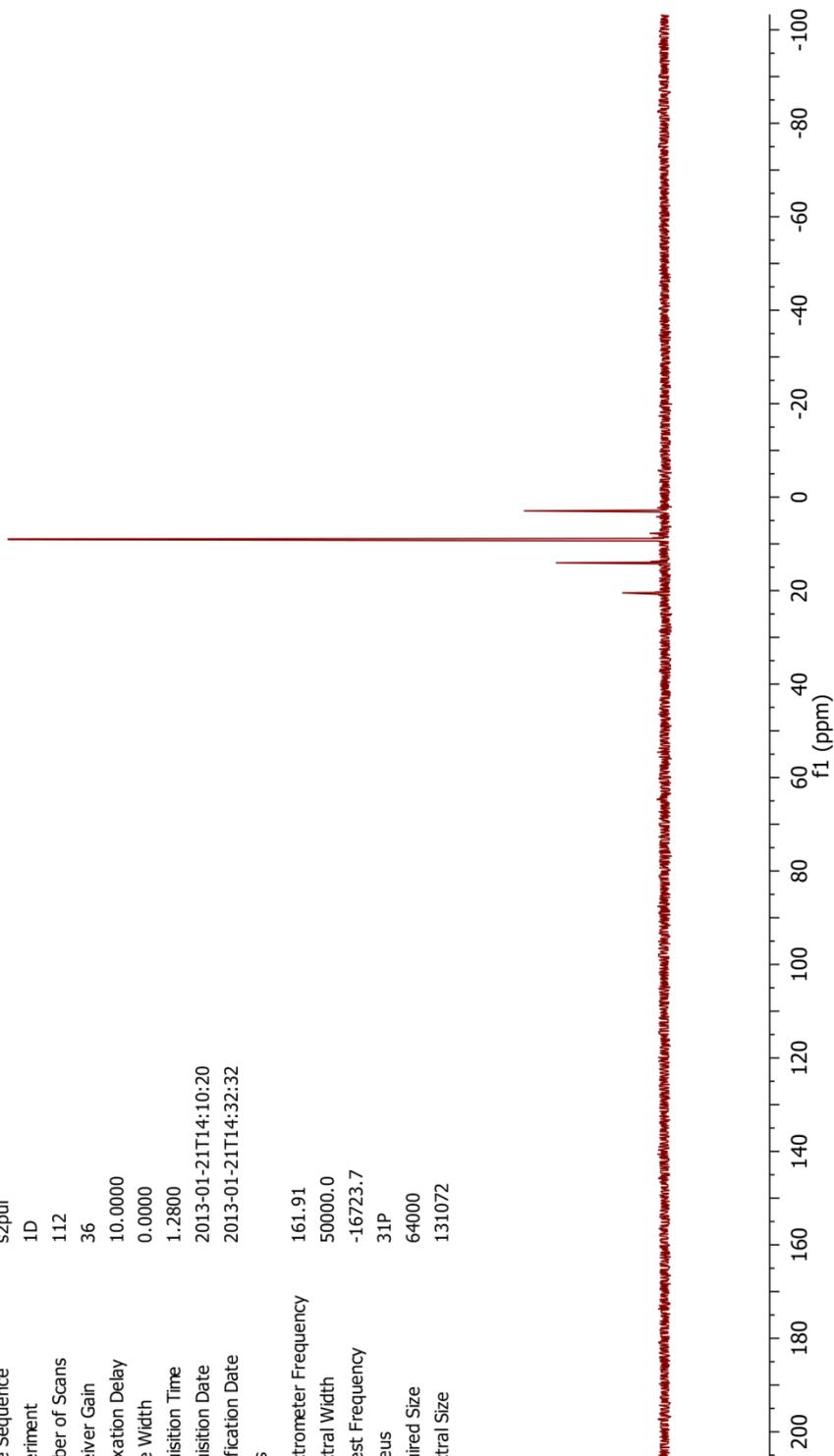
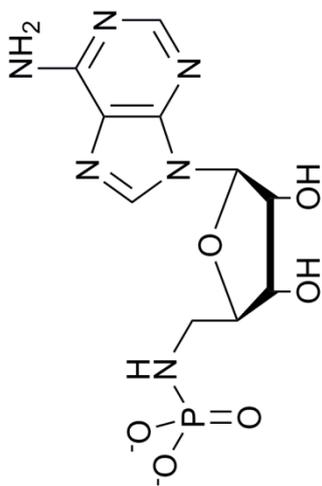


5'-Amino-5'-deoxyadenosine Phosphorylation with POCl₃, pH 12, ¹H NMR Spectrum

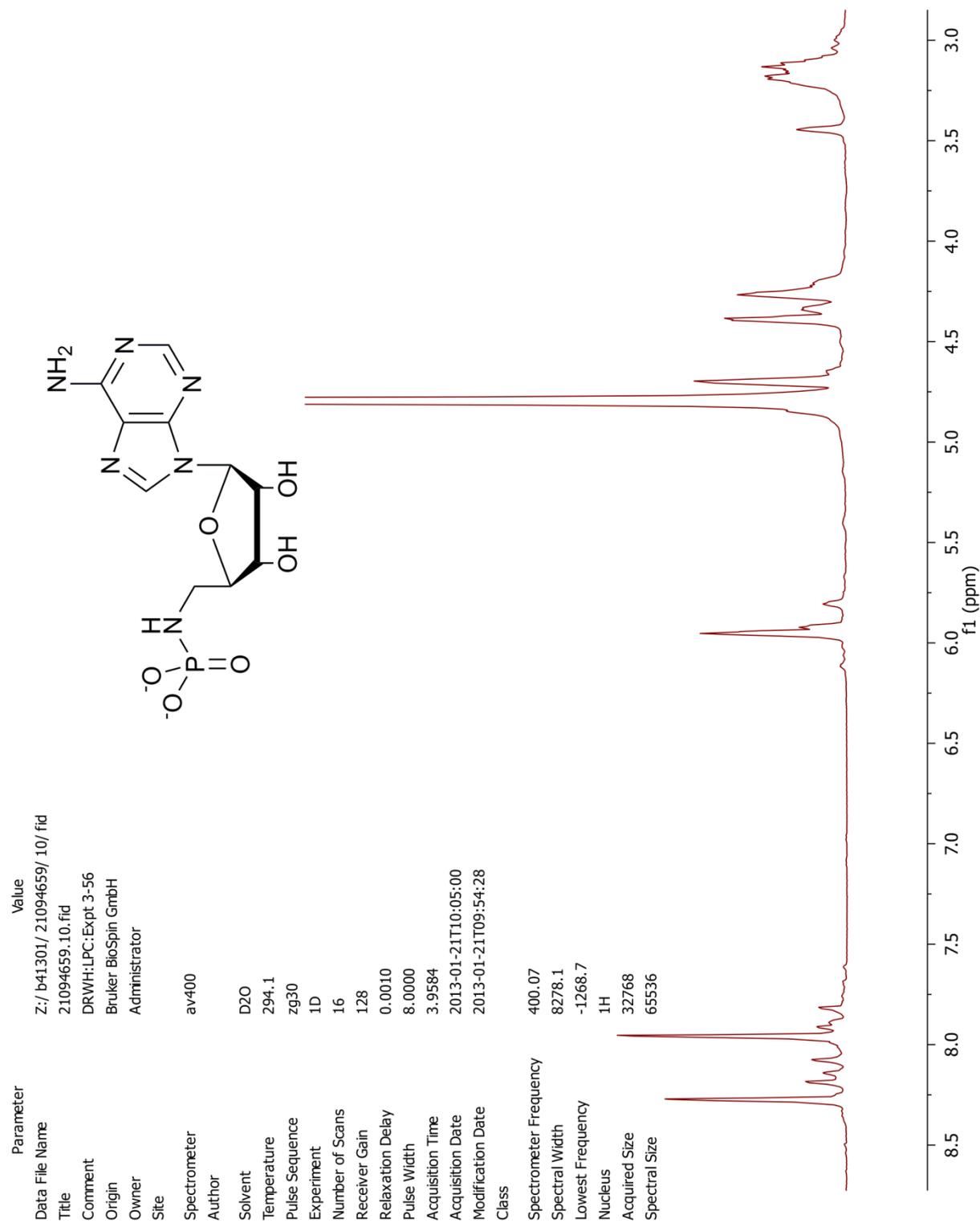


5'-Amino-5'-deoxyadenosine Phosphorylation with POCl_3 , pH 12, ^{31}P NMR Spectrum

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Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	112
Receiver Gain	36
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-01-21T14:10:20
Modification Date	2013-01-21T14:32:32
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16723.7
Nucleus	^{31}P
Acquired Size	64000
Spectral Size	131072



5'-Amino-5'-deoxyadenosine Phosphorylation with KOPOCl_2 , pH 12, ^1H NMR Spectrum

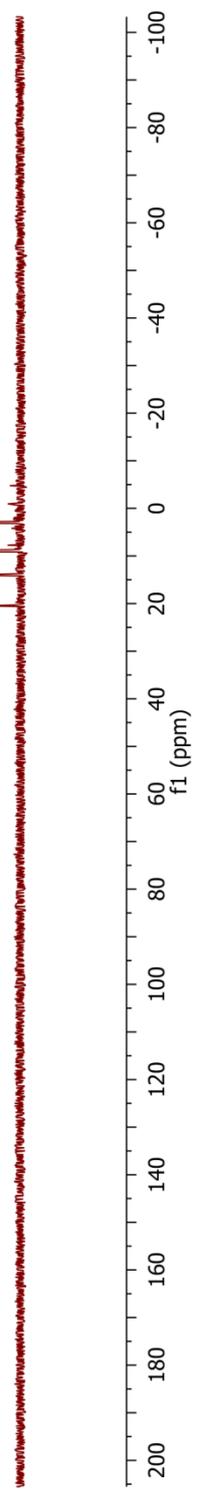
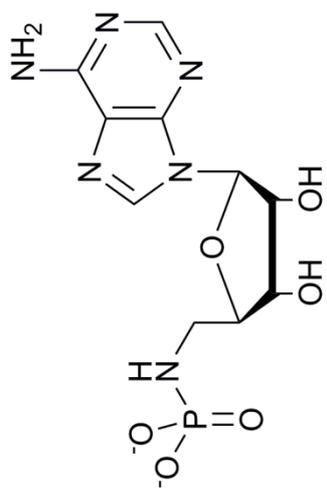


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Author	
Solvent	D2O
Temperature	294.1
Pulse Sequence	zg30
Experiment	1D
Number of Scans	16
Receiver Gain	128
Relaxation Delay	0.0010
Pulse Width	8.0000
Acquisition Time	3.9584
Acquisition Date	2013-01-21T10:05:00
Modification Date	2013-01-21T09:54:28
Class	

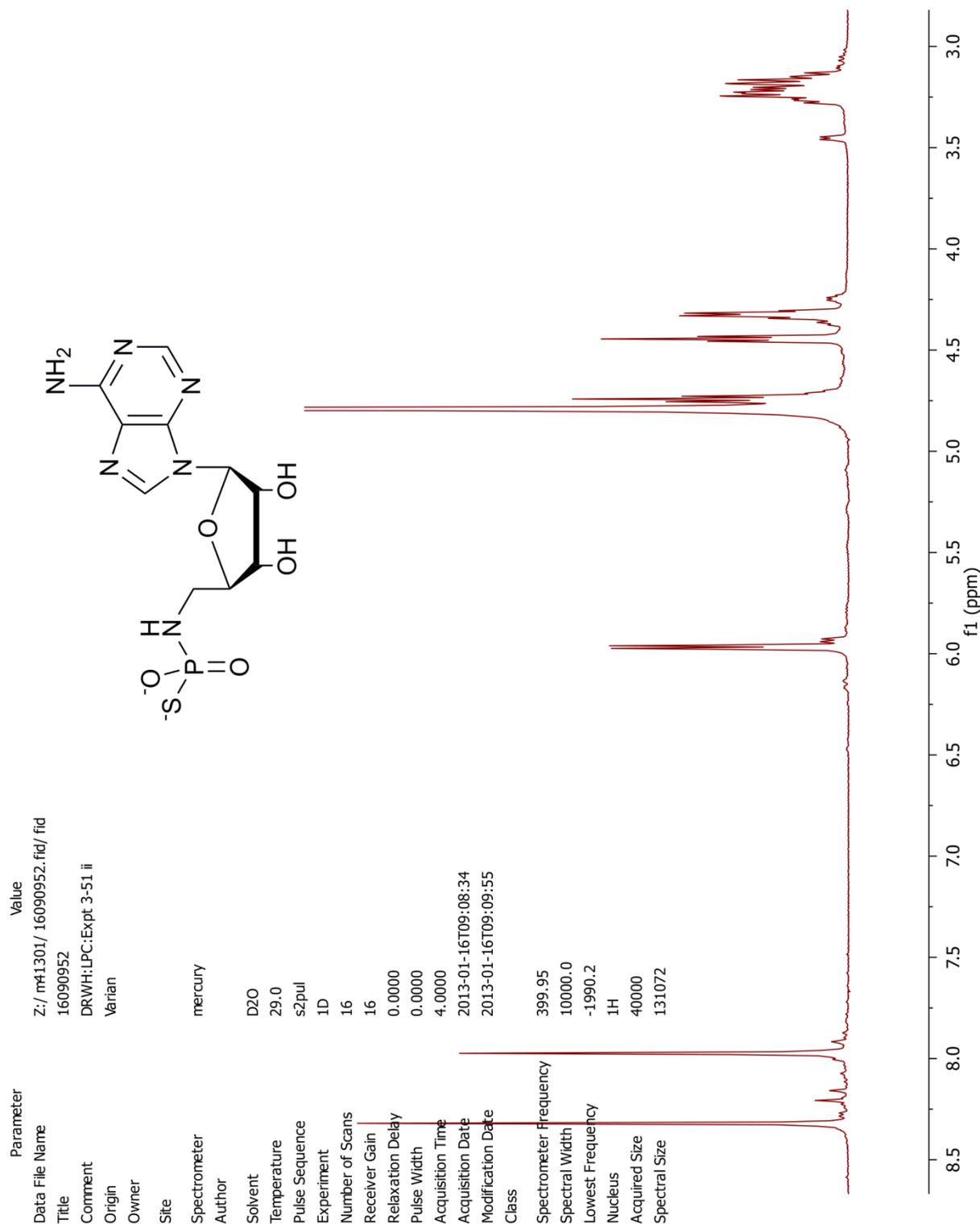
Spectrometer Frequency	400.07
Spectral Width	8278.1
Lowest Frequency	-1268.7
Nucleus	^1H
Acquired Size	32768
Spectral Size	65536

5'-Amino-5'-deoxyadenosine Phosphorylation with KPOCl_2 , pH 12, ^{31}P NMR Spectrum

Parameter	Value
Data File Name	Z:/m41301/21151901.fid/ fid
Title	21151901
Comment	DRWH:LPC:Expt 3-56 iv
Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	34
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-01-21T14:54:32
Modification Date	2013-01-21T15:19:04
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16723.7
Nucleus	^{31}P
Acquired Size	64000
Spectral Size	131072

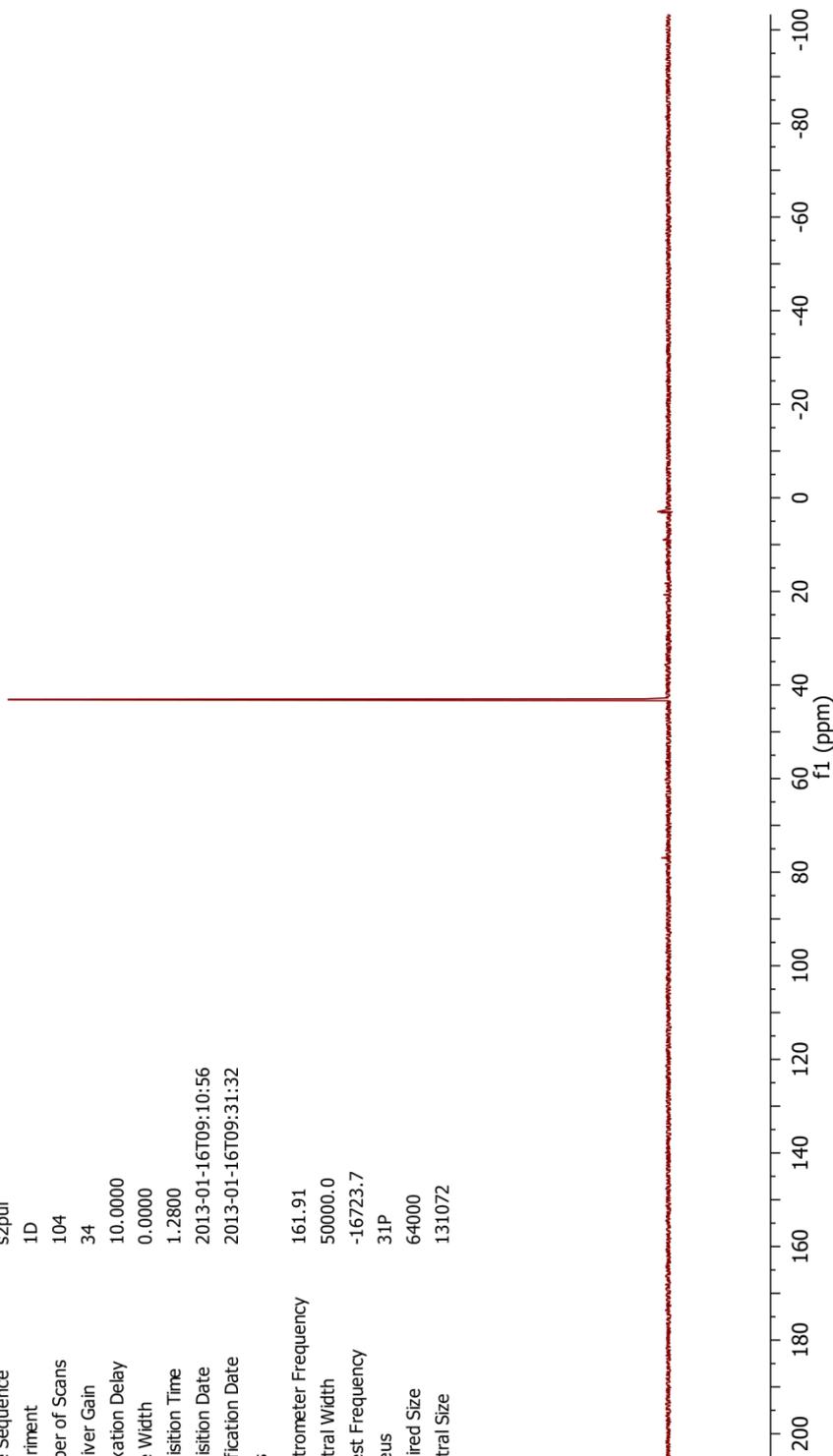
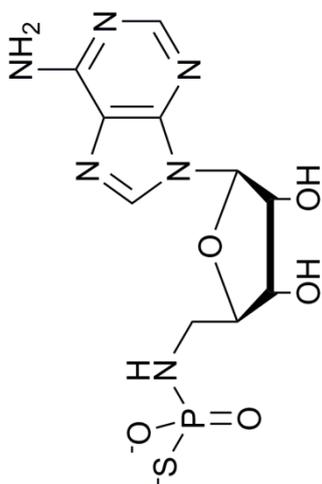


5'-Amino-5'-deoxyadenosine Phosphorylation with PSCl_3 , pH 12, ^1H NMR Spectrum

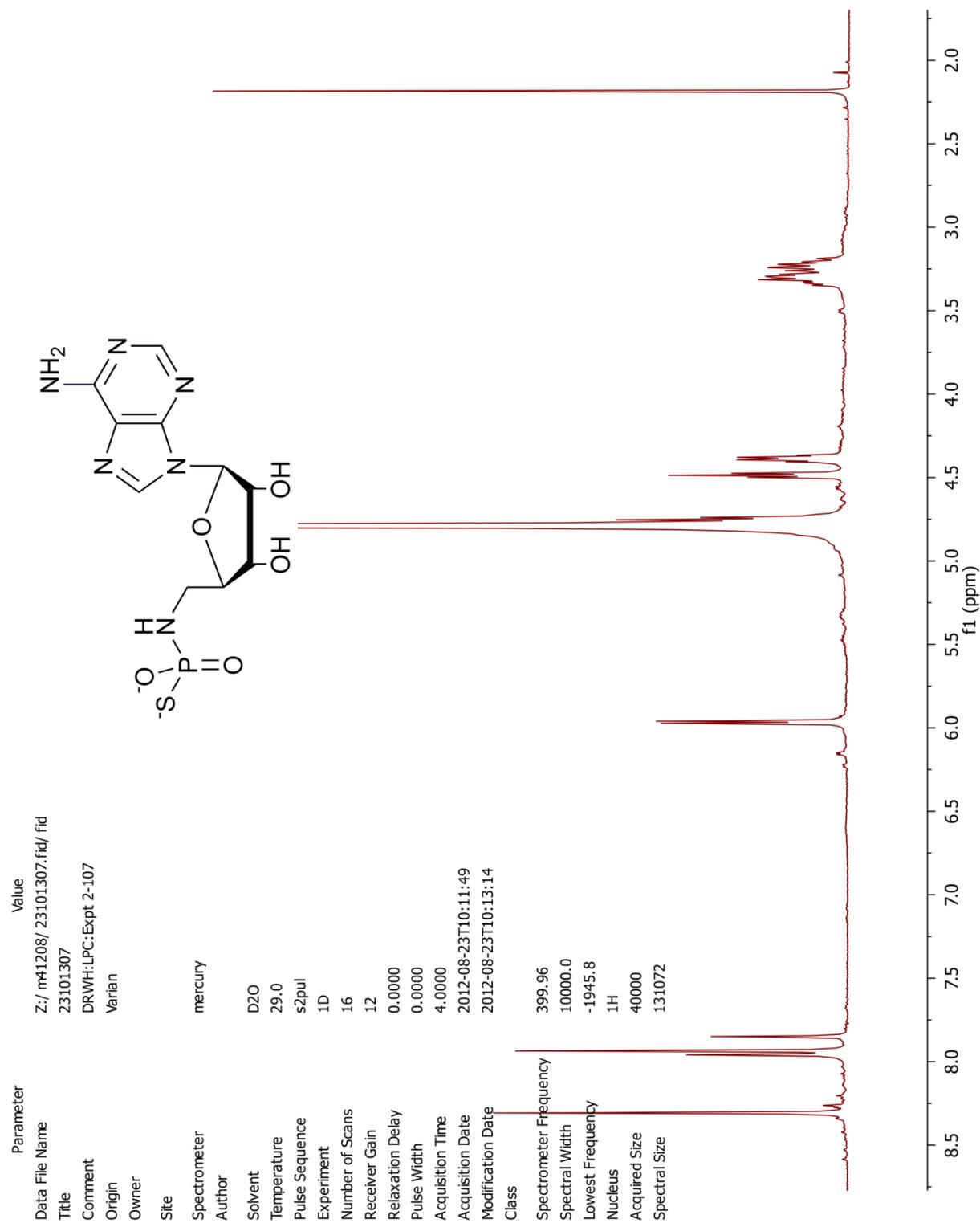


5'-Amino-5'-deoxyadenosine Phosphorylation with PSCl_3 , pH 12, ^{31}P NMR Spectrum

Parameter	Value
Data File Name	Z:/m#1301/16093129.fid/ fid
Title	16093129
Comment	DRWH:LPC:Expt 3-51 iii
Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	104
Receiver Gain	34
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-01-16T09:10:56
Modification Date	2013-01-16T09:31:32
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
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Nucleus	^{31}P
Acquired Size	64000
Spectral Size	131072

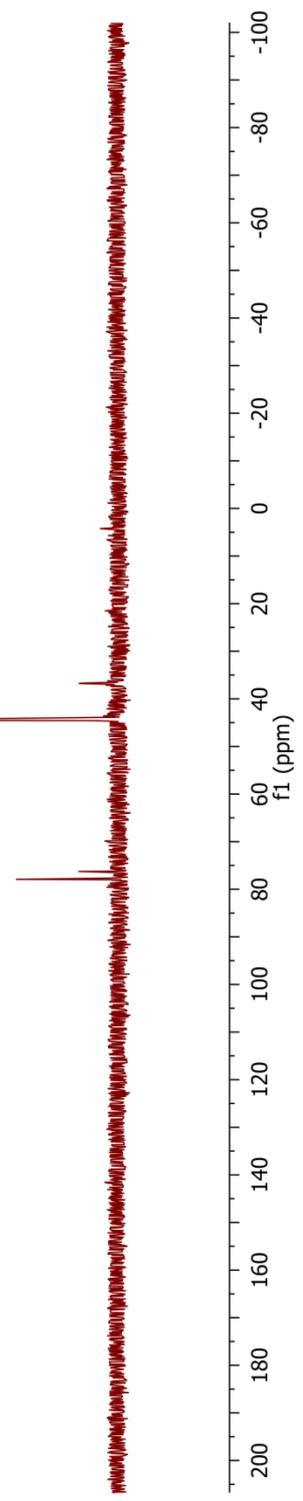
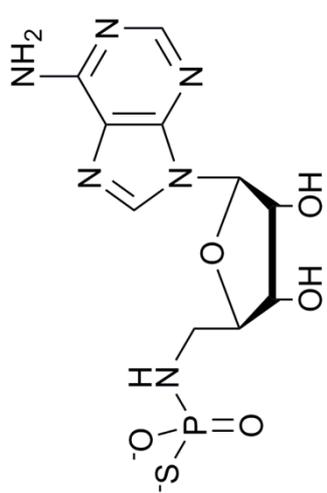


5'-Amino-5'-deoxyadenosine Phosphorylation with KOPSCl₂, pH 12, ¹H NMR Spectrum



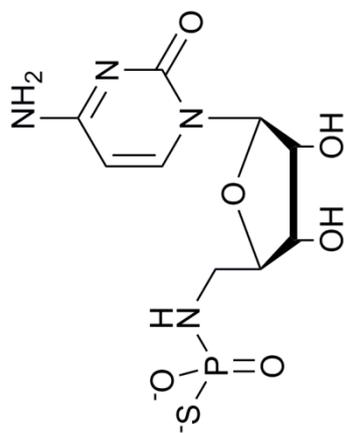
5'-Amino-5'-deoxyadenosine Phosphorylation with KOPSCl₂, pH 12, ³¹P NMR Spectrum

Parameter	Value
Data File Name	Z:/ m41208/ 23100722.fid/ fid
Title	23100722
Comment	DRWH:LPC:PHOSPHORUS OBSERVE STANDARD PARAMETERS PHOSPHATE REGION
Origin	Varian
Owner	
Site	
Spectrometer	mercury
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	256
Receiver Gain	34
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2012-08-23T09:18:49
Modification Date	2012-08-23T10:07:28
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16525.0
Nucleus	31P
Acquired Size	64000
Spectral Size	131072

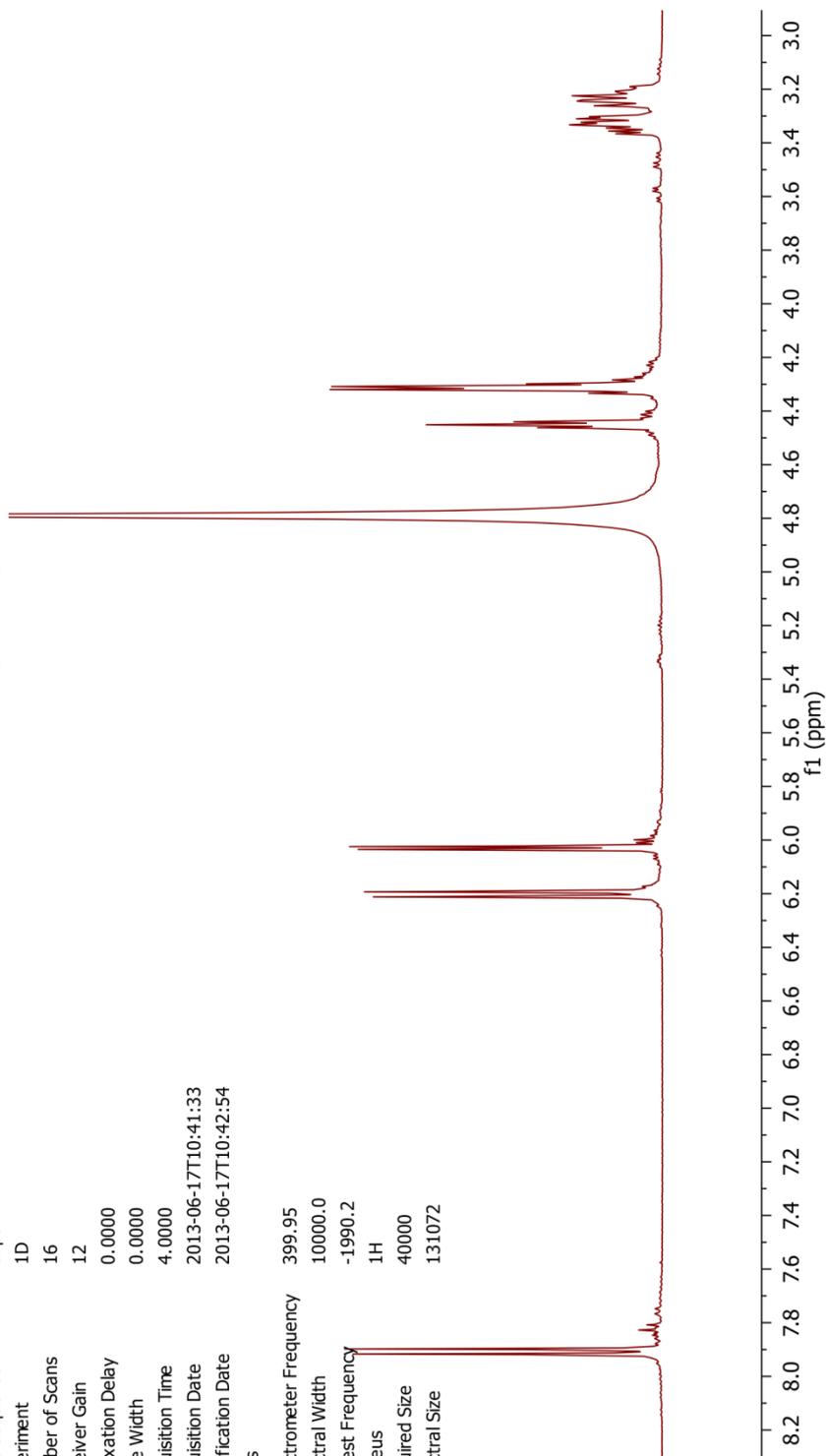


5'-Amino-5'-deoxycytidine Phosphorylation with PSCl_3 , pH 12, ^1H NMR Spectrum

Parameter Value
Data File Name Z:/m41306/17104251.fid/ fid
Title 17104251
Comment DRWH:LPC:STANDARD 1H OBSERVE
Origin Varian
Owner
Site mercury
Spectrometer
Author
Solvent D2O
Temperature 29.0
Pulse Sequence s2pul
Experiment 1D
Number of Scans 16
Receiver Gain 12
Relaxation Delay 0.0000
Pulse Width 0.0000
Acquisition Time 4.0000
Acquisition Date 2013-06-17T10:41:33
Modification Date 2013-06-17T10:42:54
Class

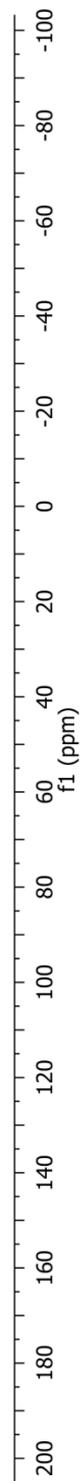
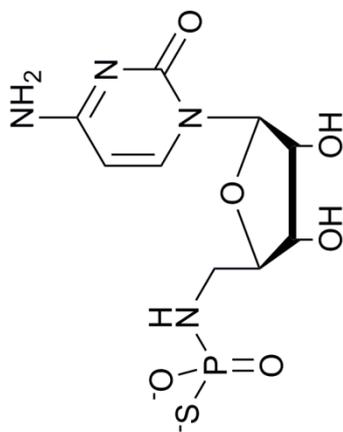


Spectrometer Frequency 399.95
Spectral Width 10000.0
Lowest Frequency -1990.2
Nucleus ^1H
Acquired Size 40000
Spectral Size 131072



5'-Amino-5'-deoxycytidine Phosphorylation with PSCl_3 , pH 12, ^{31}P NMR Spectrum

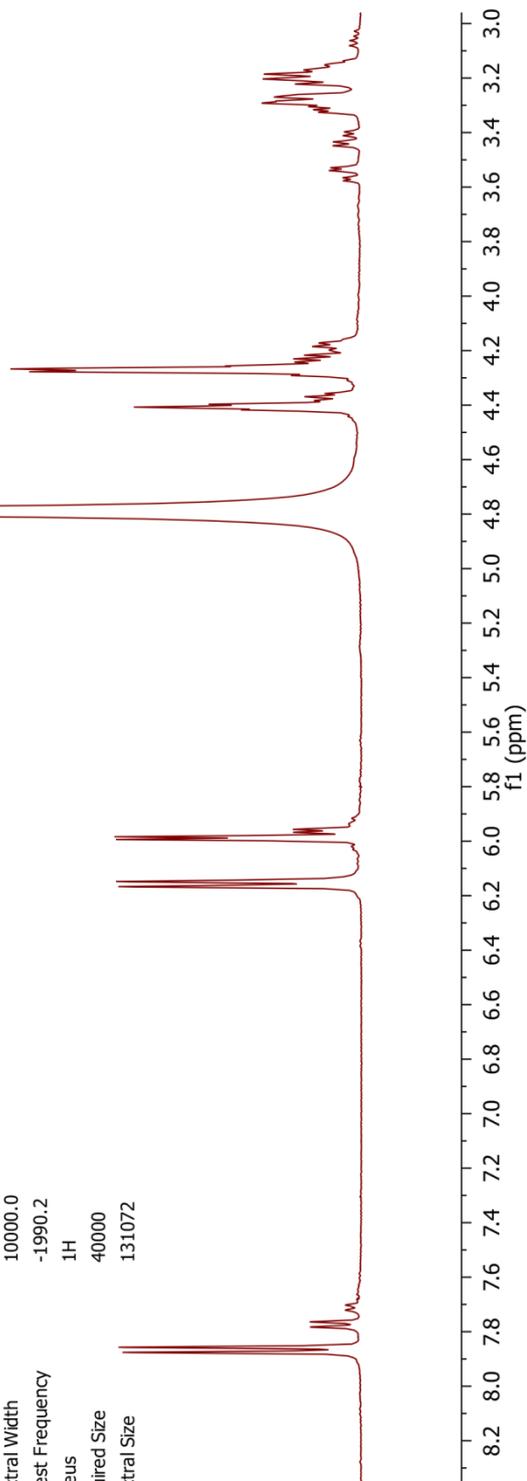
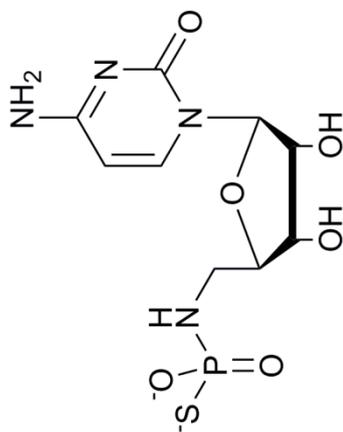
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Data File Name	Z:/m41306/17110801.fid/ fid
Title	17110801
Comment	DRWH:LPC:PHOSPHORUS OBSERVE STANDARD PARAMETERS PHOSPHATE REGION
Origin	Varian
Owner	
Site	
Spectrometer	mercury
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	28
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-06-17T10:43:32
Modification Date	2013-06-17T11:08:03
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16723.7
Nucleus	31P
Acquired Size	64000
Spectral Size	131072



5'-Amino-5'-deoxycytidine Phosphorylation with KOPSCl₂, pH 12, ¹H NMR Spectrum

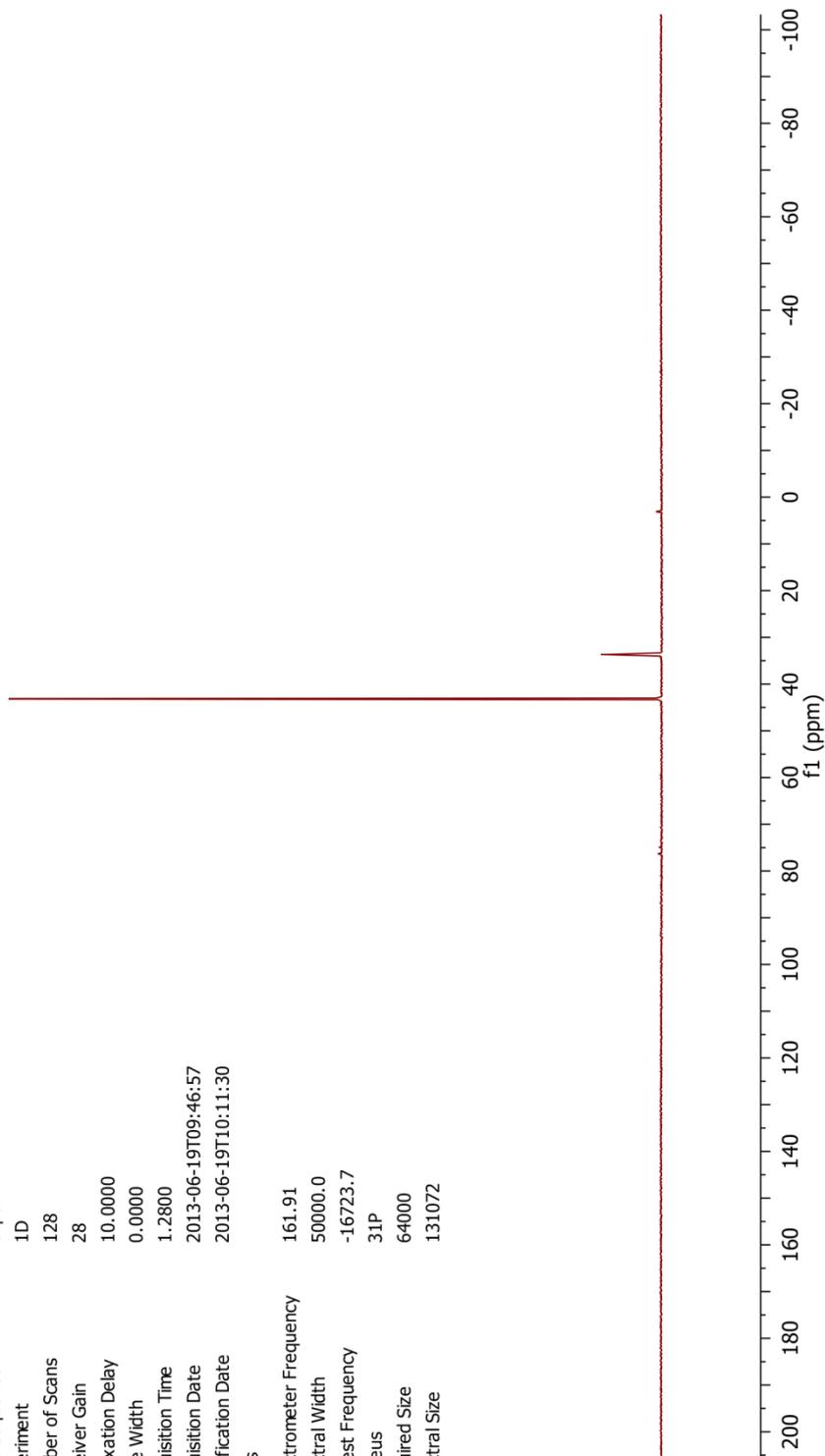
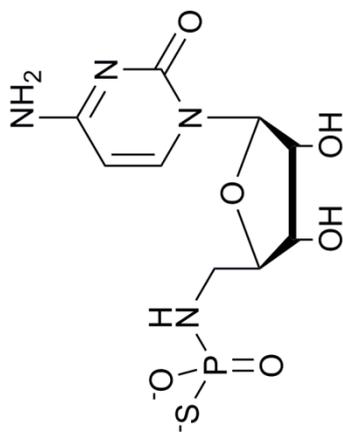
Parameter Value
Data File Name Z:/ m41306/ 19094542.fid/ fid
Title 19094542
Comment DRWH:LPC:Expt 3-130 ii
Origin Varian
Owner
Site mercury
Spectrometer
Author
Solvent D2O
Temperature 29.0
Pulse Sequence s2pul
Experiment 1D
Number of Scans 16
Receiver Gain 10
Relaxation Delay 0.0000
Pulse Width 0.0000
Acquisition Time 4.0000
Acquisition Date 2013-06-19T09:44:24
Modification Date 2013-06-19T09:45:46

Class
Spectrometer Frequency 399.95
Spectral Width 10000.0
Lowest Frequency -1990.2
Nucleus ¹H
Acquired Size 40000
Spectral Size 131072

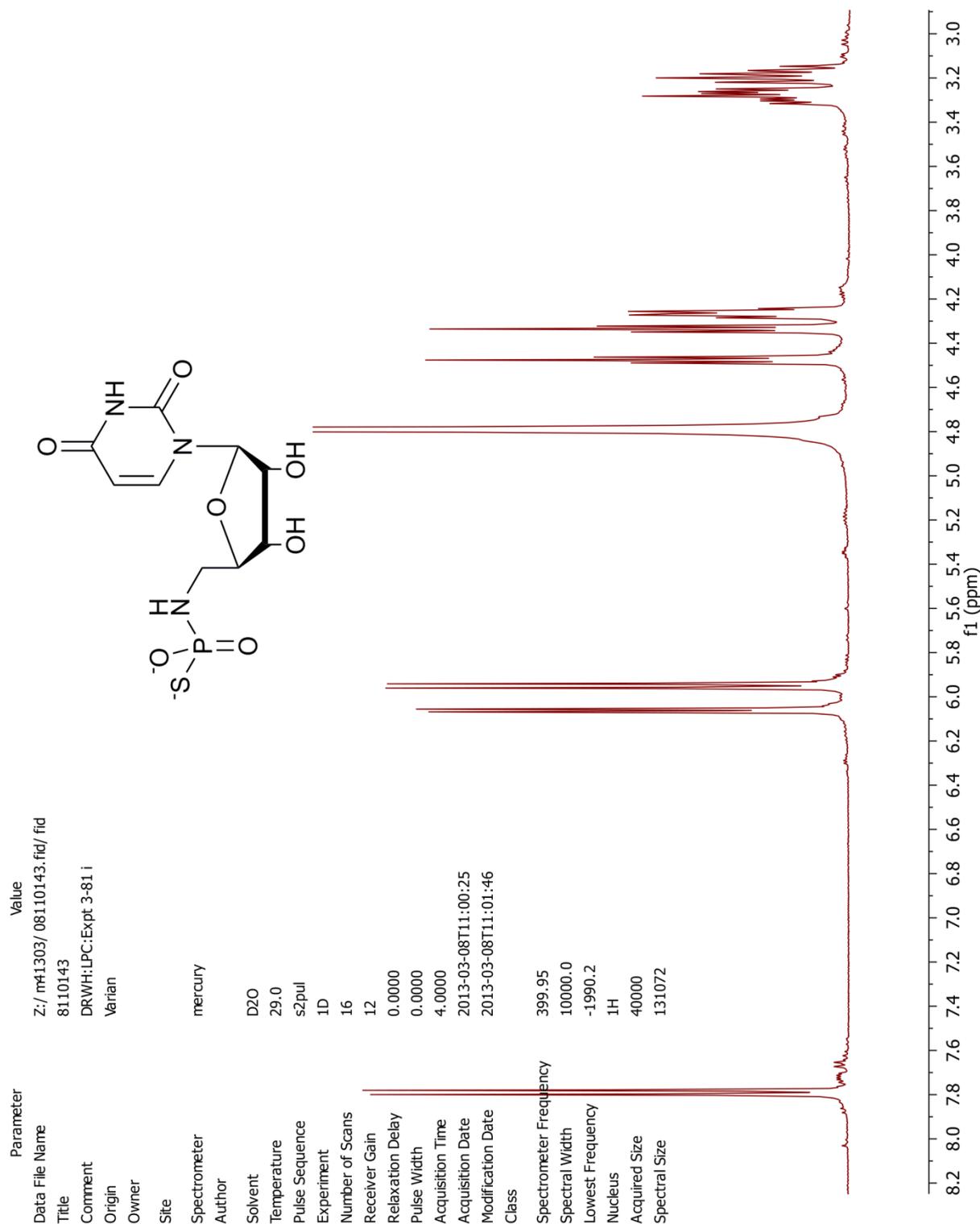


5'-Amino-5'-deoxycytidine Phosphorylation with KOPSCl₂, pH 12, ³¹P NMR Spectrum

Parameter	Value
Data File Name	Z:/m#1306/19101126.fid/ fid
Title	19101126
Comment	DRWH:PC:Expt 3-130 iii
Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	28
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-06-19T09:46:57
Modification Date	2013-06-19T10:11:30
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16723.7
Nucleus	31P
Acquired Size	64000
Spectral Size	131072

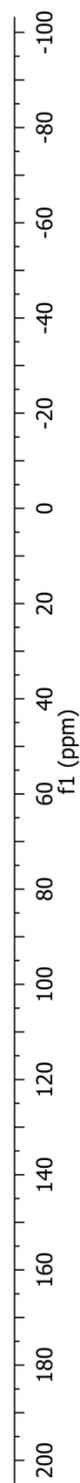
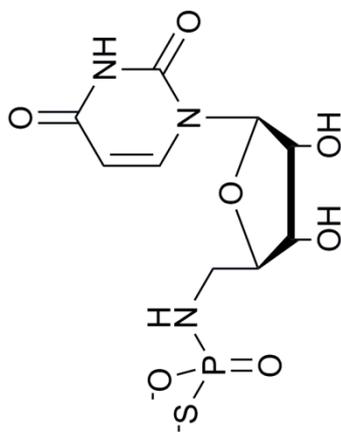


5'-Amino-5'-deoxyuridine Phosphorylation with PSCl_3 , pH 12, ^1H NMR Spectrum

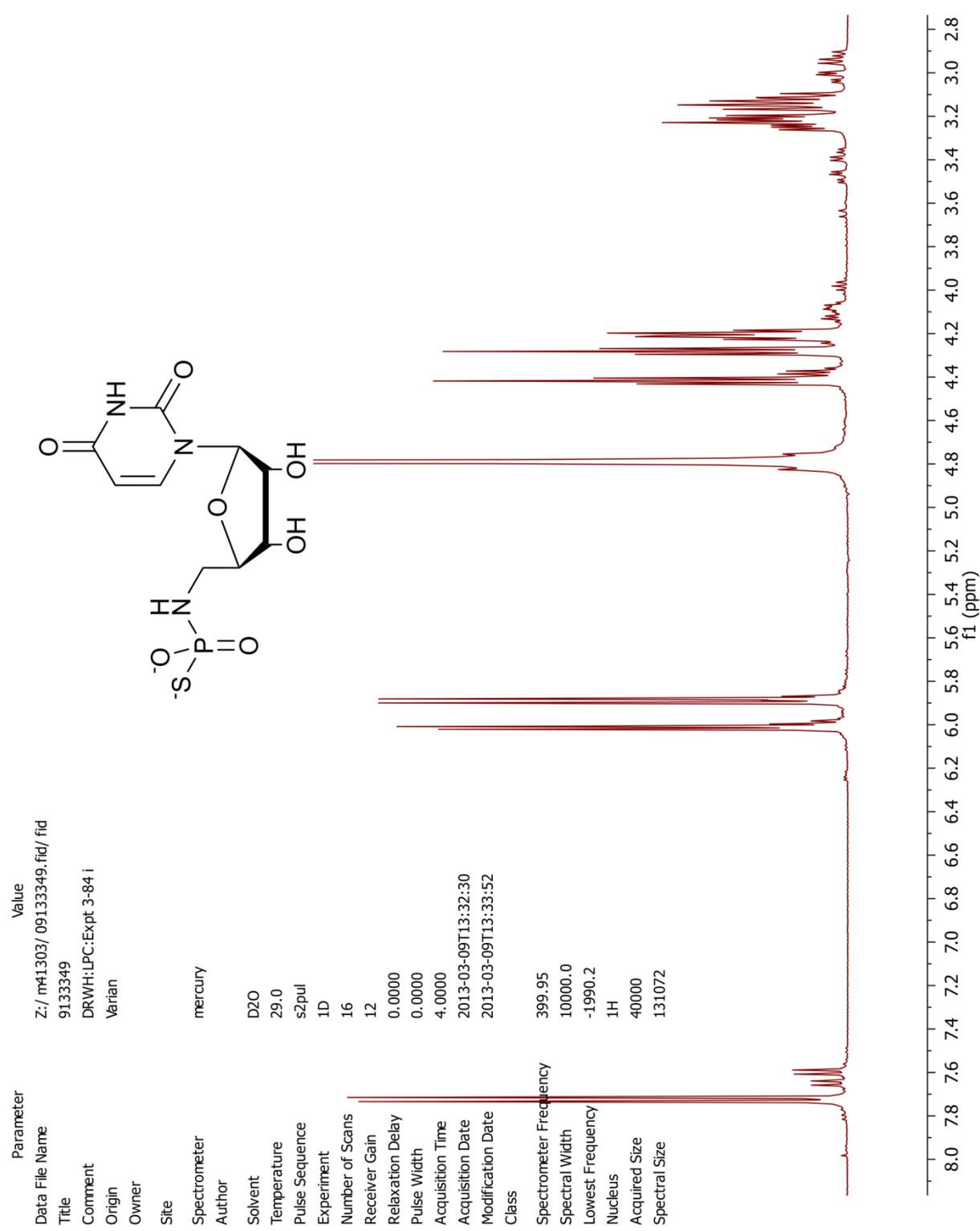


5'-Amino-5'-deoxyuridine Phosphorylation with PSCl_3 , pH 12, ^{31}P NMR Spectrum

Parameter	Value
Data File Name	Z:/m41303/08112647.fid/ fid
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Comment	DRWH:LPC:Expt 3-81 ii
Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	28
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-03-08T11:02:18
Modification Date	2013-03-08T11:26:50
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16723.7
Nucleus	^{31}P
Acquired Size	64000
Spectral Size	131072

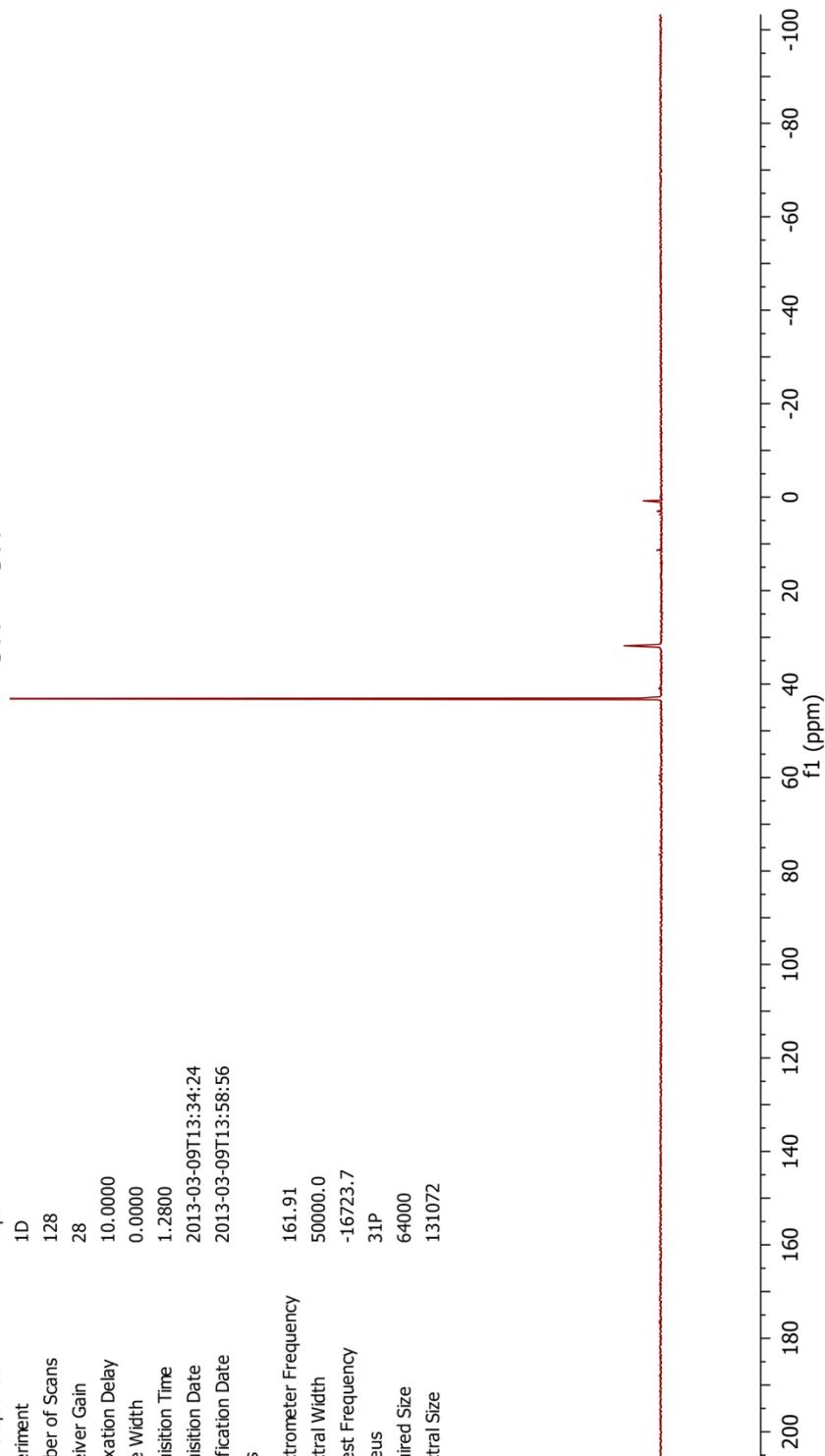
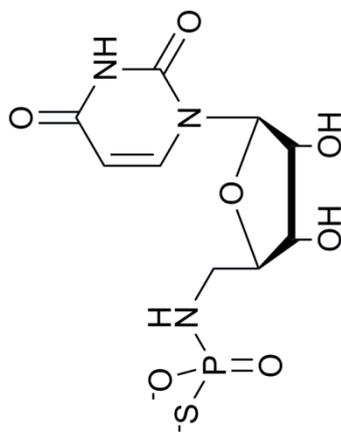


5'-Amino-5'-deoxyuridine Phosphorylation with KOPSCl₂, pH 12, ¹H NMR Spectrum



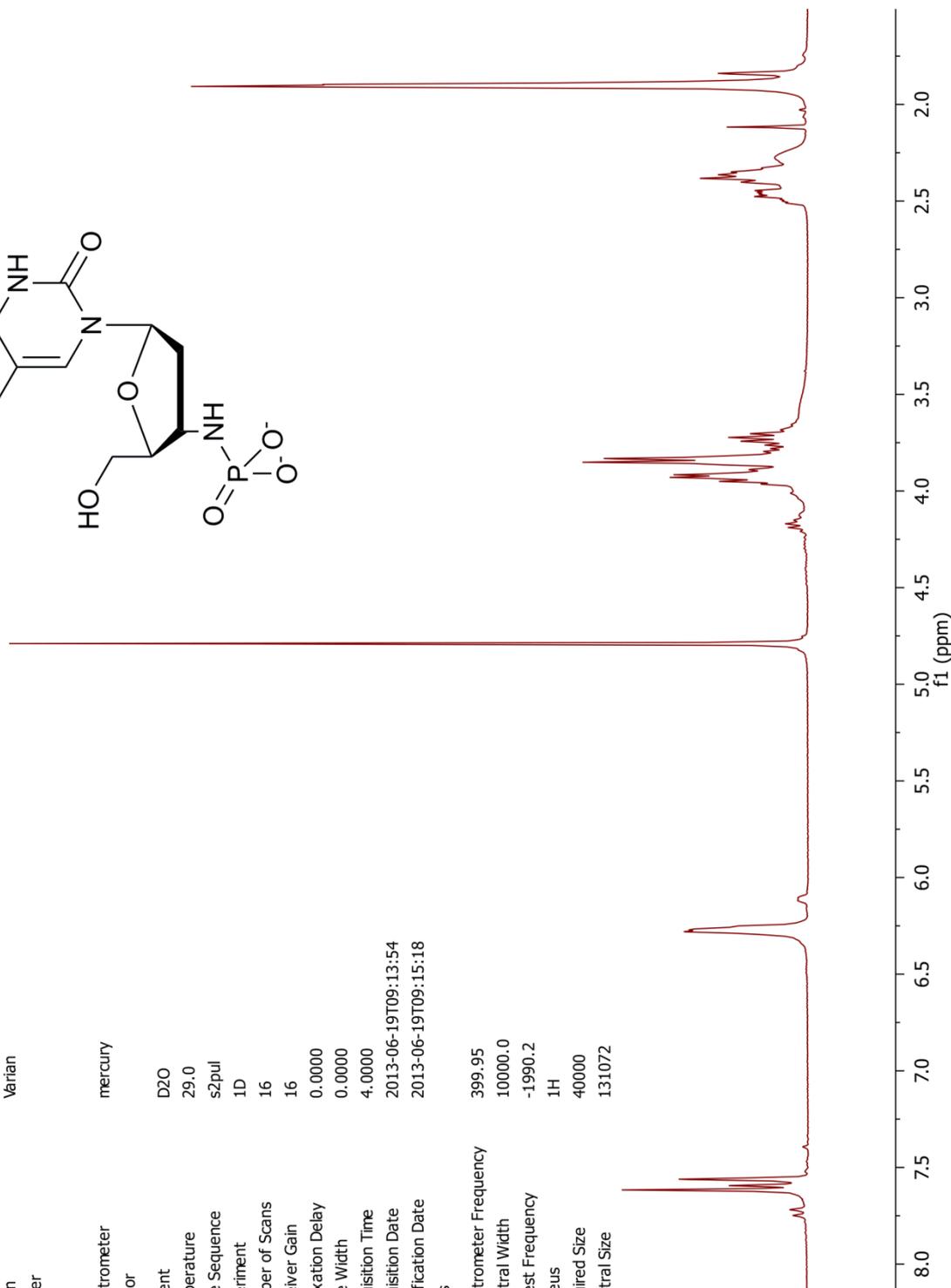
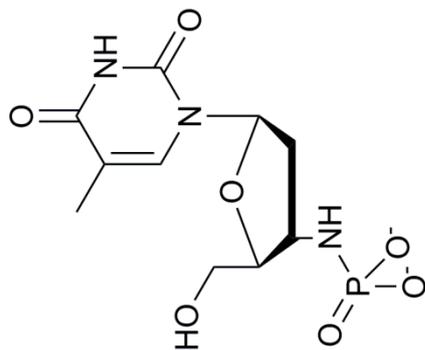
5'-Amino-5'-deoxyuridine Phosphorylation with KOPSCl_2 , pH 12, ^{31}P NMR Spectrum

Parameter	Value
Data File Name	Z:/m#1303/09135852.fid/ fid
Title	9135852
Comment	DRWH:LPC:Expt 3-84 ii
Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	28
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-03-09T13:34:24
Modification Date	2013-03-09T13:58:56
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
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Nucleus	^{31}P
Acquired Size	64000
Spectral Size	131072



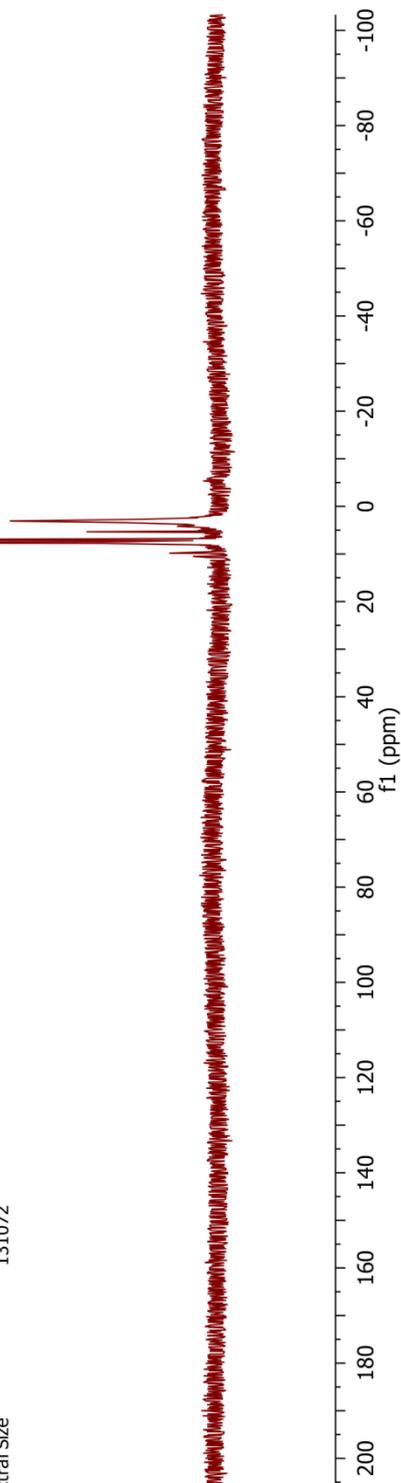
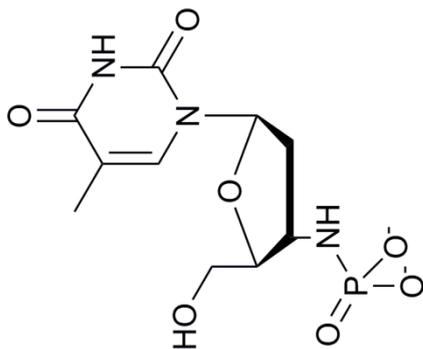
3'-Amino-3'-deoxythymidine Phosphorylation with POCl₃, pH 12, ¹H NMR Spectrum

Parameter	Value
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Title	19091512
Comment	DRWH:LPC:Expt 3-123
Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	16
Receiver Gain	16
Relaxation Delay	0.0000
Pulse Width	0.0000
Acquisition Time	4.0000
Acquisition Date	2013-06-19T09:13:54
Modification Date	2013-06-19T09:15:18
Class	
Spectrometer Frequency	399.95
Spectral Width	10000.0
Lowest Frequency	-1990.2
Nucleus	¹ H
Acquired Size	40000
Spectral Size	131072

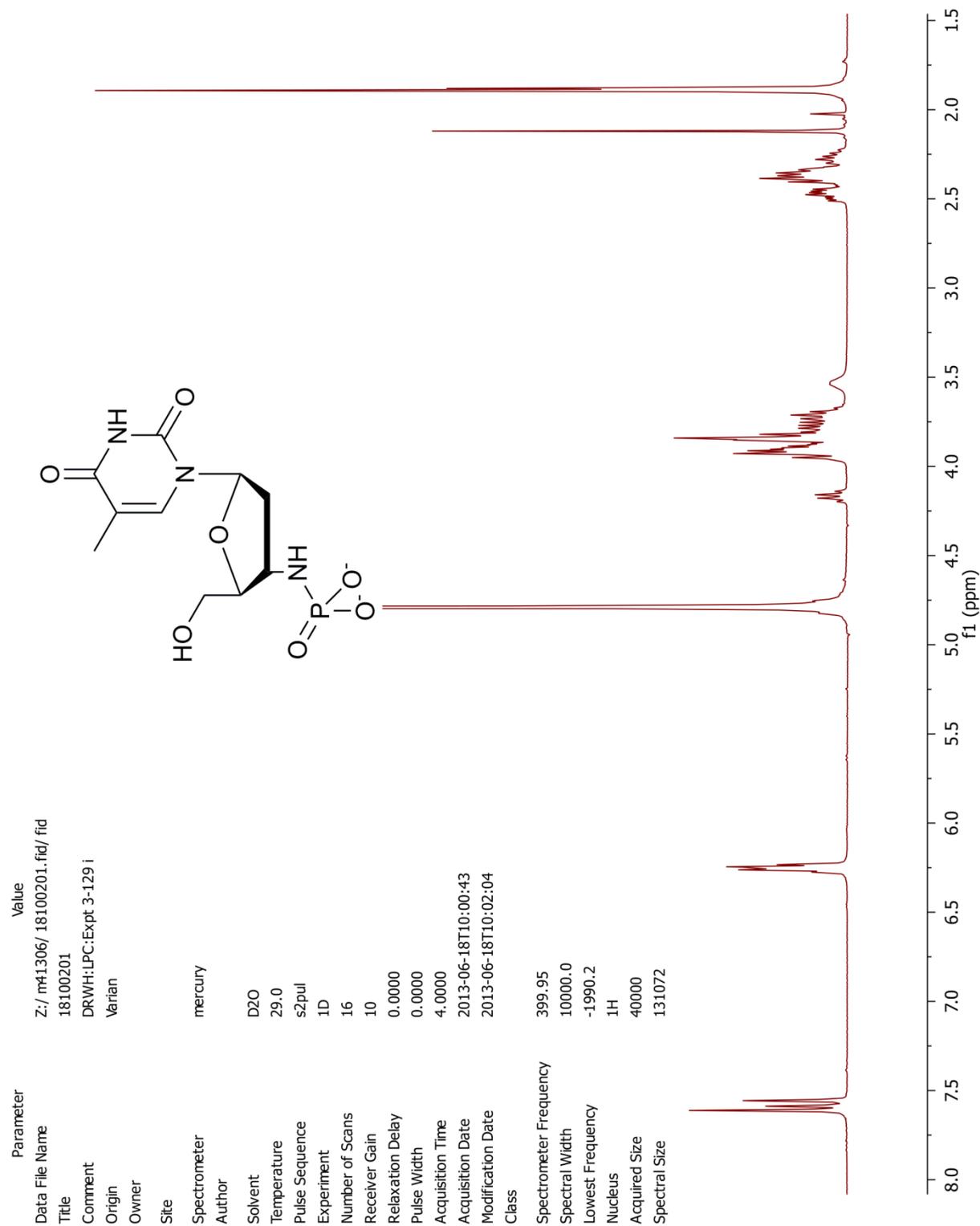


3'-Amino-3'-deoxythymidine Phosphorylation with POCl₃, pH 12, ³¹P NMR Spectrum

Parameter	Value
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Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	28
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-06-19T09:17:15
Modification Date	2013-06-19T09:41:37
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16723.7
Nucleus	31P
Acquired Size	64000
Spectral Size	131072

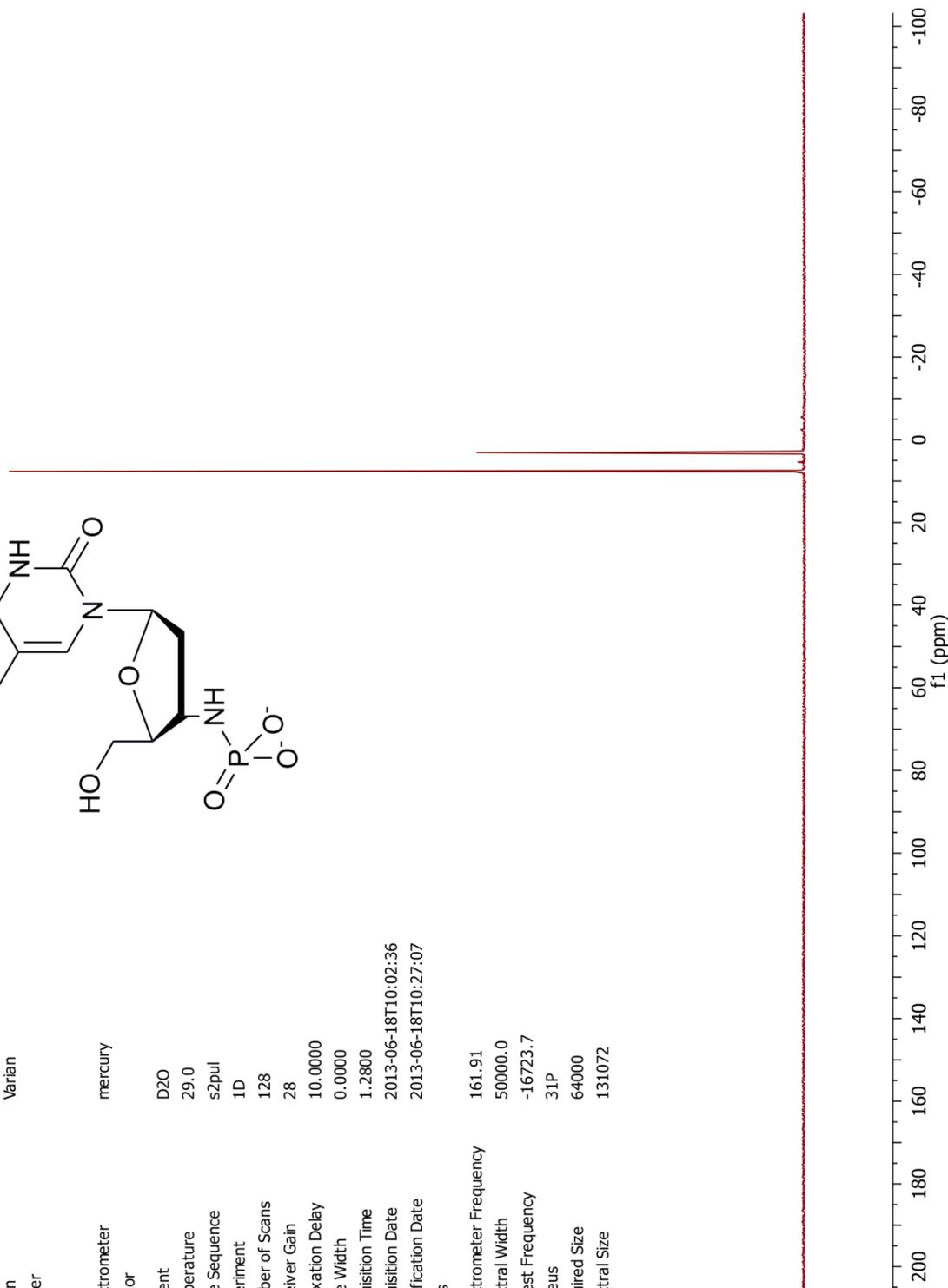
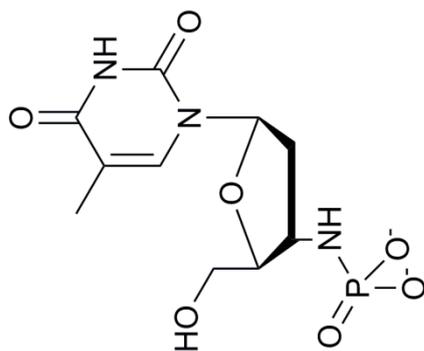


3'-Amino-3'-deoxythymidine Phosphorylation with KPOCl_2 , pH 12, ^1H NMR Spectrum



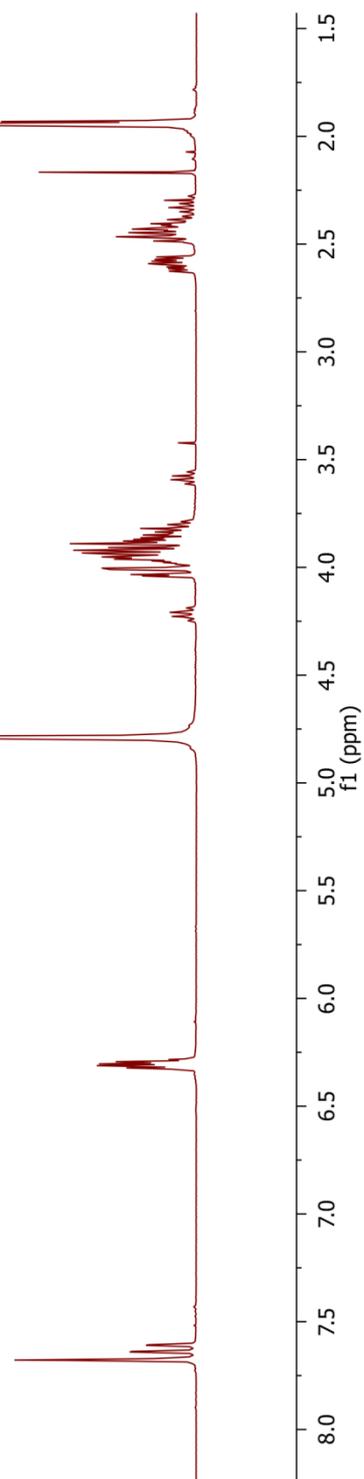
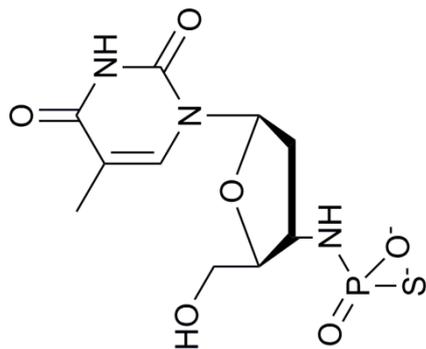
3'-Amino-3'-deoxythymidine Phosphorylation with KPOCl_2 , pH 12, ^{31}P NMR Spectrum

Parameter	Value
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Title	18102705
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Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	28
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-06-18T10:02:36
Modification Date	2013-06-18T10:27:07
Class	
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Spectral Width	50000.0
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Nucleus	^{31}P
Acquired Size	64000
Spectral Size	131072

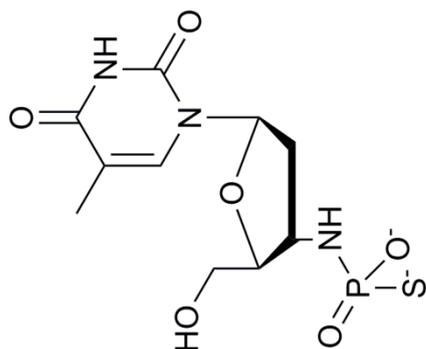


3'-Amino-3'-deoxythymidine Phosphorylation with PSCl_3 , pH 12, ^1H NMR Spectrum

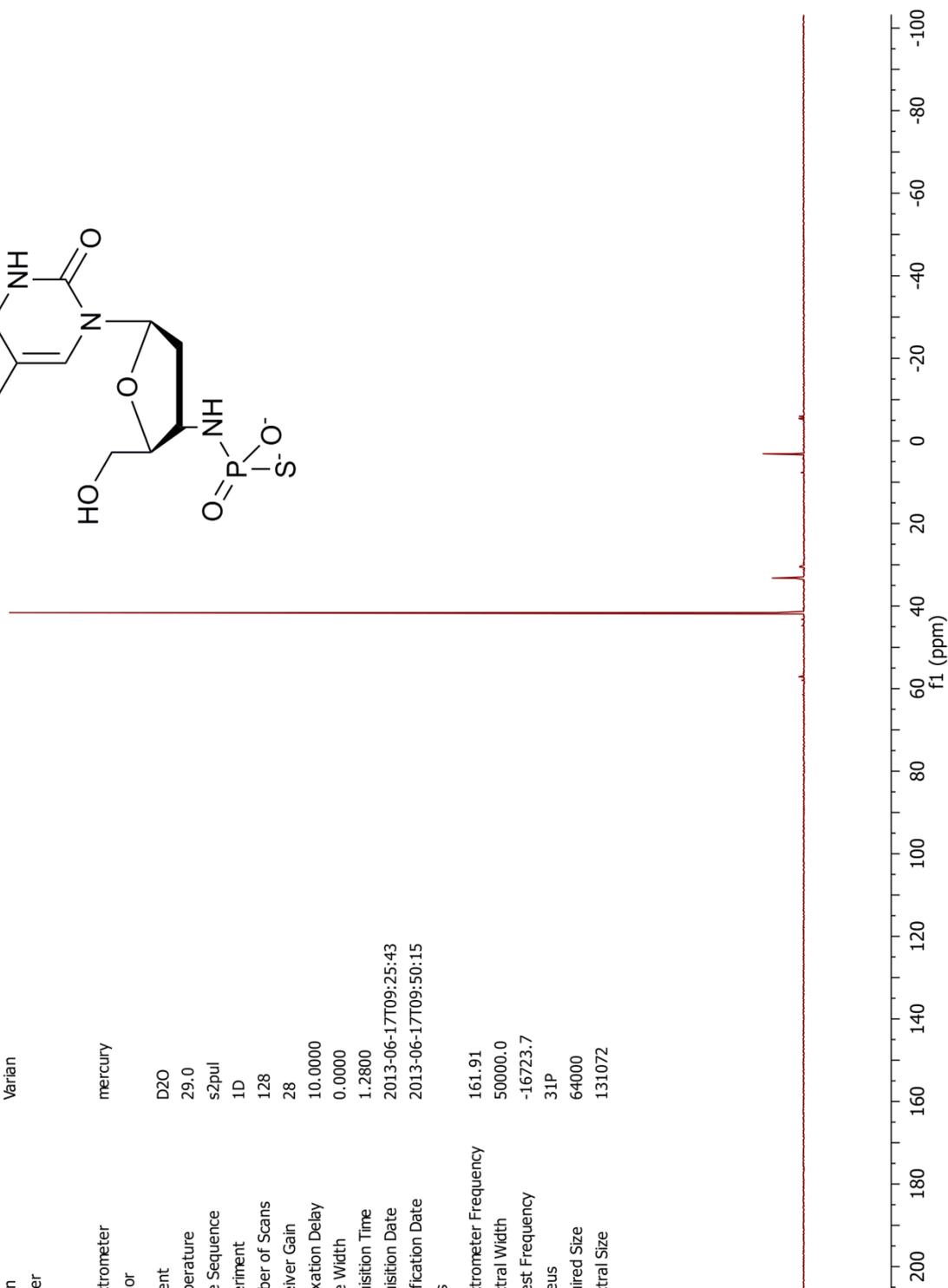
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Data File Name	Z:/m41306/17092448.fid/ fid
Title	17092448
Comment	DRWH:LPC:Expt 3-122 iii
Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	16
Receiver Gain	16
Relaxation Delay	0.0000
Pulse Width	0.0000
Acquisition Time	4.0000
Acquisition Date	2013-06-17T09:23:30
Modification Date	2013-06-17T09:24:50
Class	
Spectrometer Frequency	399.95
Spectral Width	10000.0
Lowest Frequency	-1990.2
Nucleus	^1H
Acquired Size	40000
Spectral Size	131072



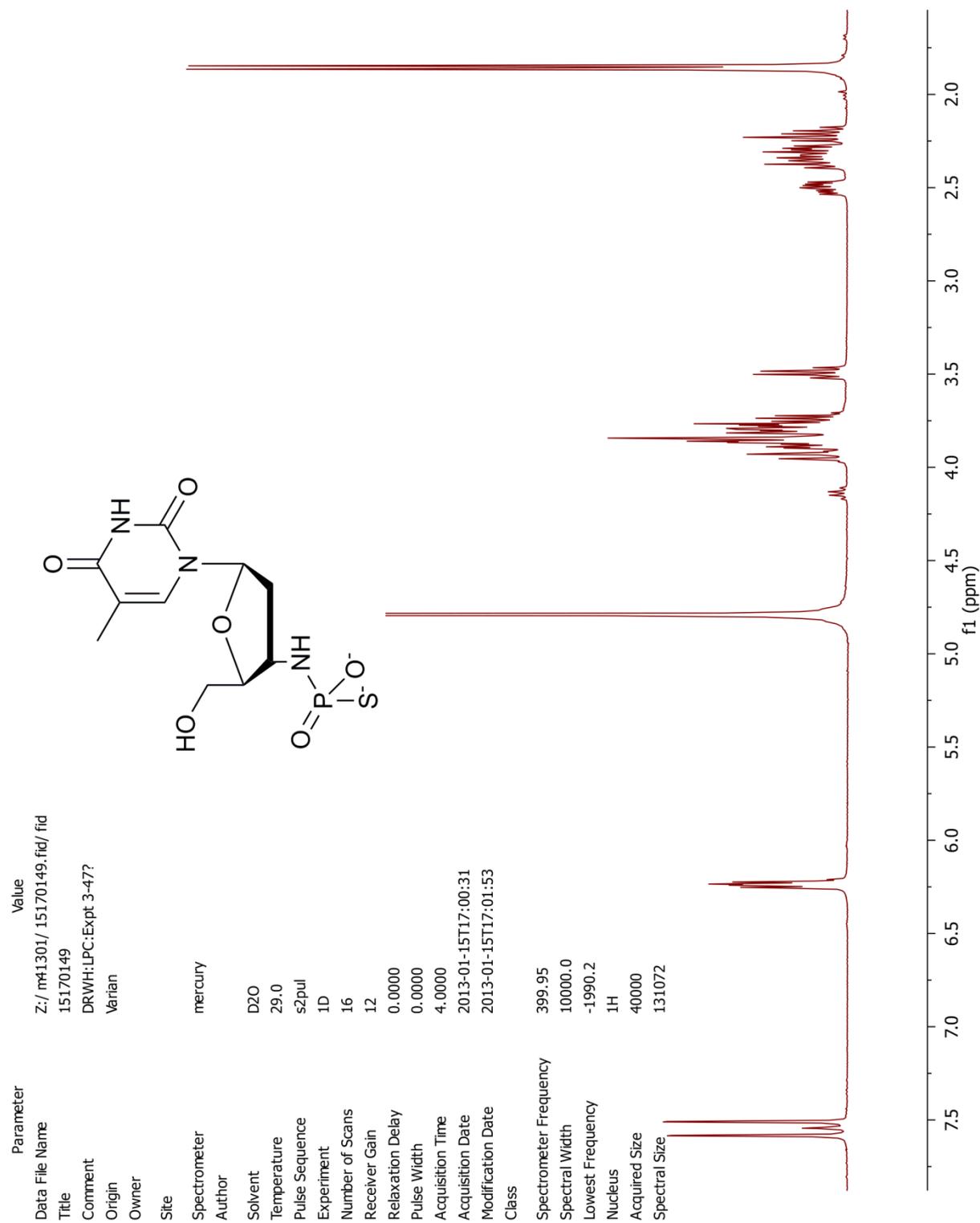
3'-Amino-3'-deoxythymidine Phosphorylation with PSCl_3 , pH 12, ^{31}P NMR Spectrum



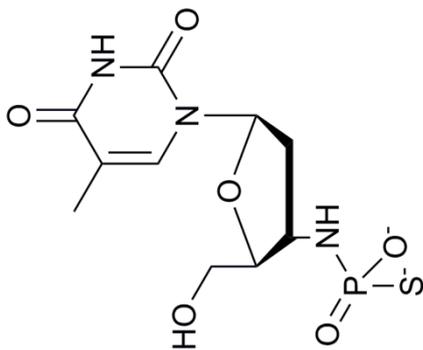
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Data File Name	Z:/m#1306/17095012.fid/ fid
Title	17095012
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Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	28
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-06-17T09:25:43
Modification Date	2013-06-17T09:50:15
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16723.7
Nucleus	^{31}P
Acquired Size	64000
Spectral Size	131072



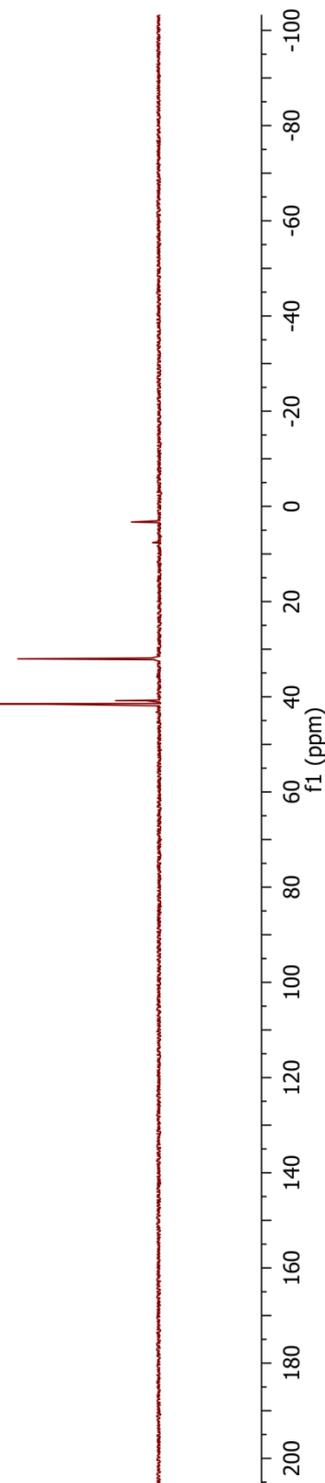
3'-Amino-3'-deoxythymidine Phosphorylation with KOPSCl₂, pH 12, ¹H NMR Spectrum



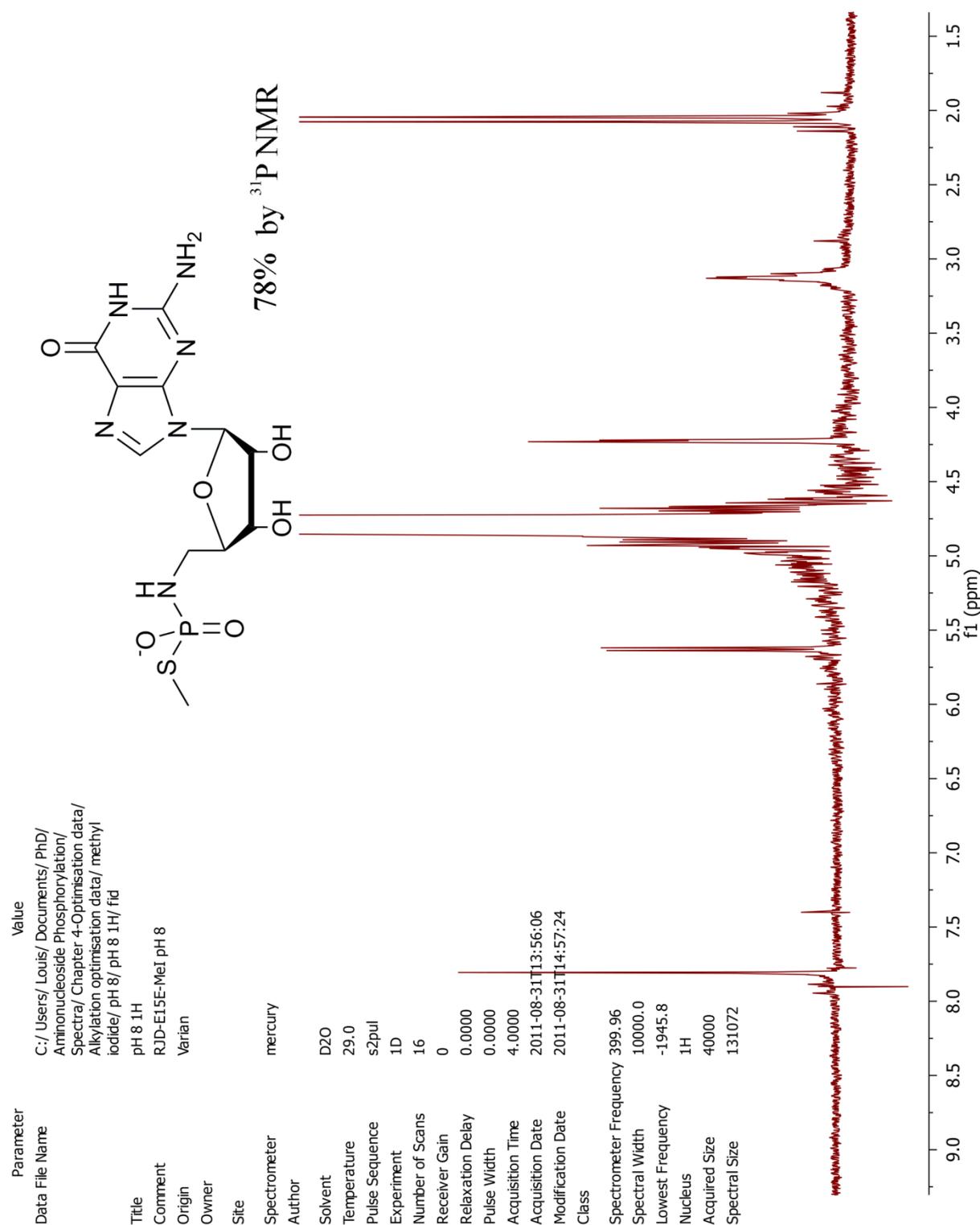
3'-Amino-3'-deoxythymidine Phosphorylation with KOPSCl₂, pH 12, ³¹P NMR Spectrum



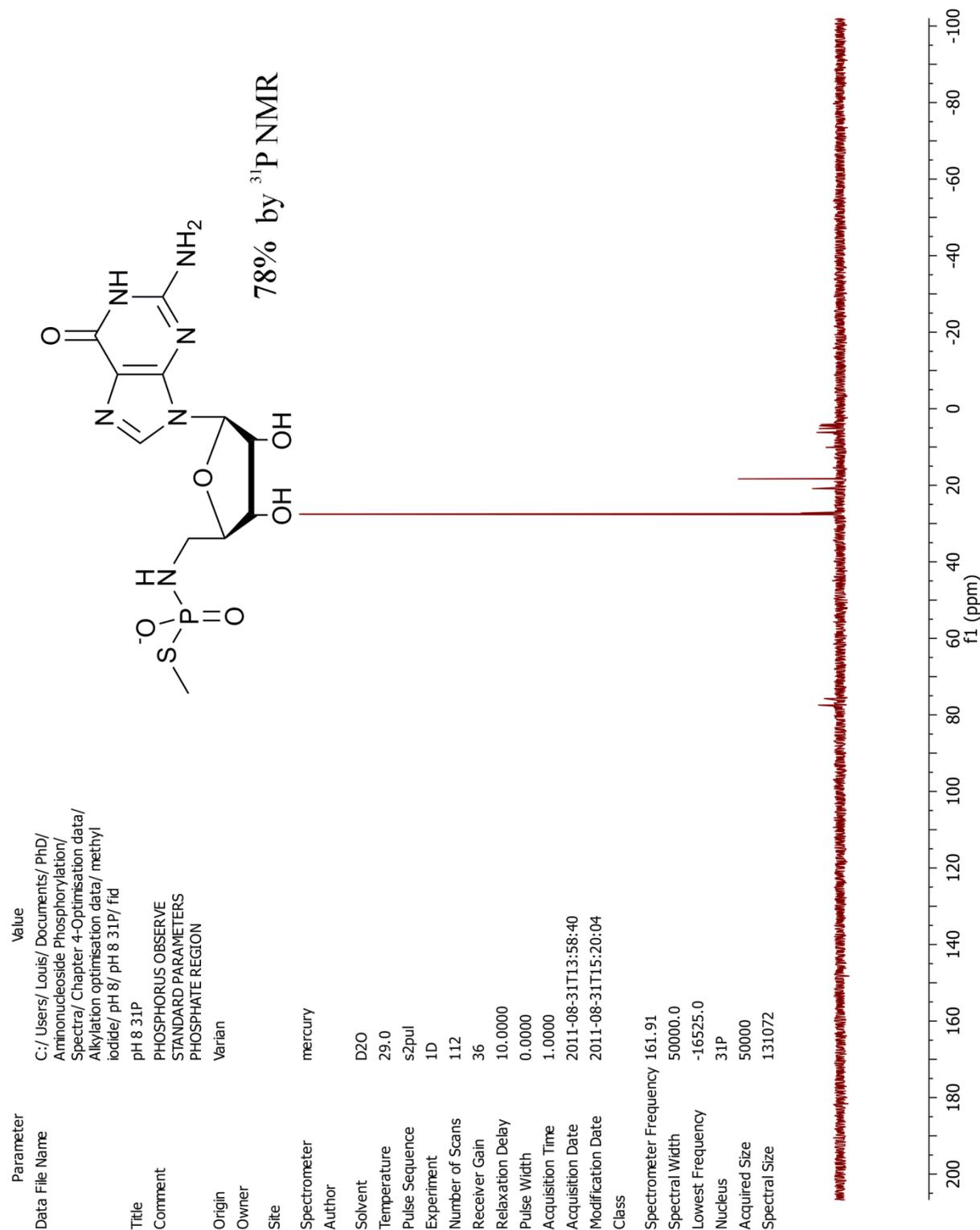
Parameter	Value
Data File Name	Z:/m41301/14095557.fid/ fid
Title	14095557
Comment	DRWH:LPC:Expt 3-50 i
Origin	Varian
Owner	
Site	mercury
Spectrometer	
Author	
Solvent	D2O
Temperature	29.0
Pulse Sequence	s2pul
Experiment	1D
Number of Scans	128
Receiver Gain	30
Relaxation Delay	10.0000
Pulse Width	0.0000
Acquisition Time	1.2800
Acquisition Date	2013-01-14T09:31:28
Modification Date	2013-01-14T09:56:00
Class	
Spectrometer Frequency	161.91
Spectral Width	50000.0
Lowest Frequency	-16723.7
Nucleus	31P
Acquired Size	64000
Spectral Size	131072



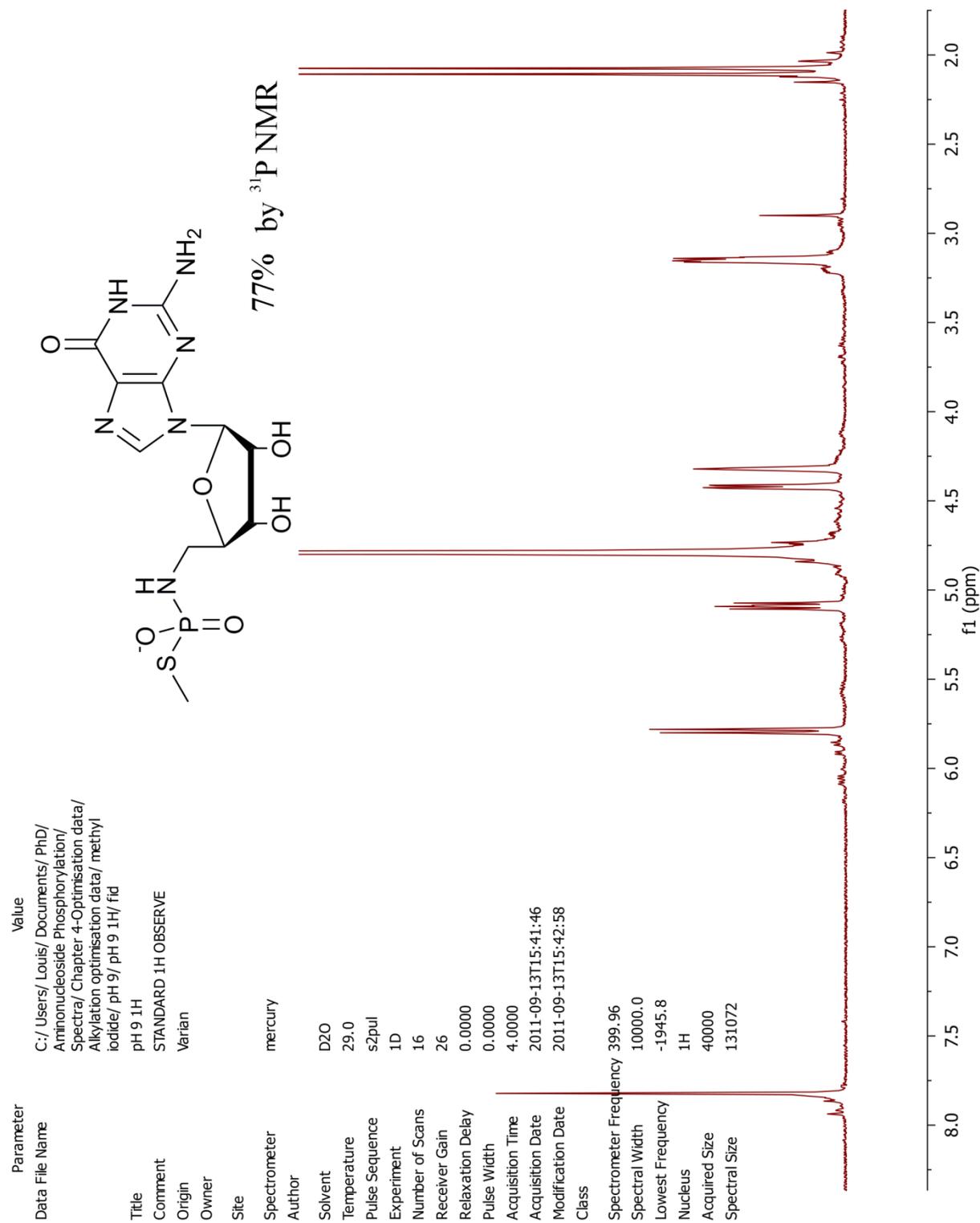
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 8, ¹H NMR Spectrum



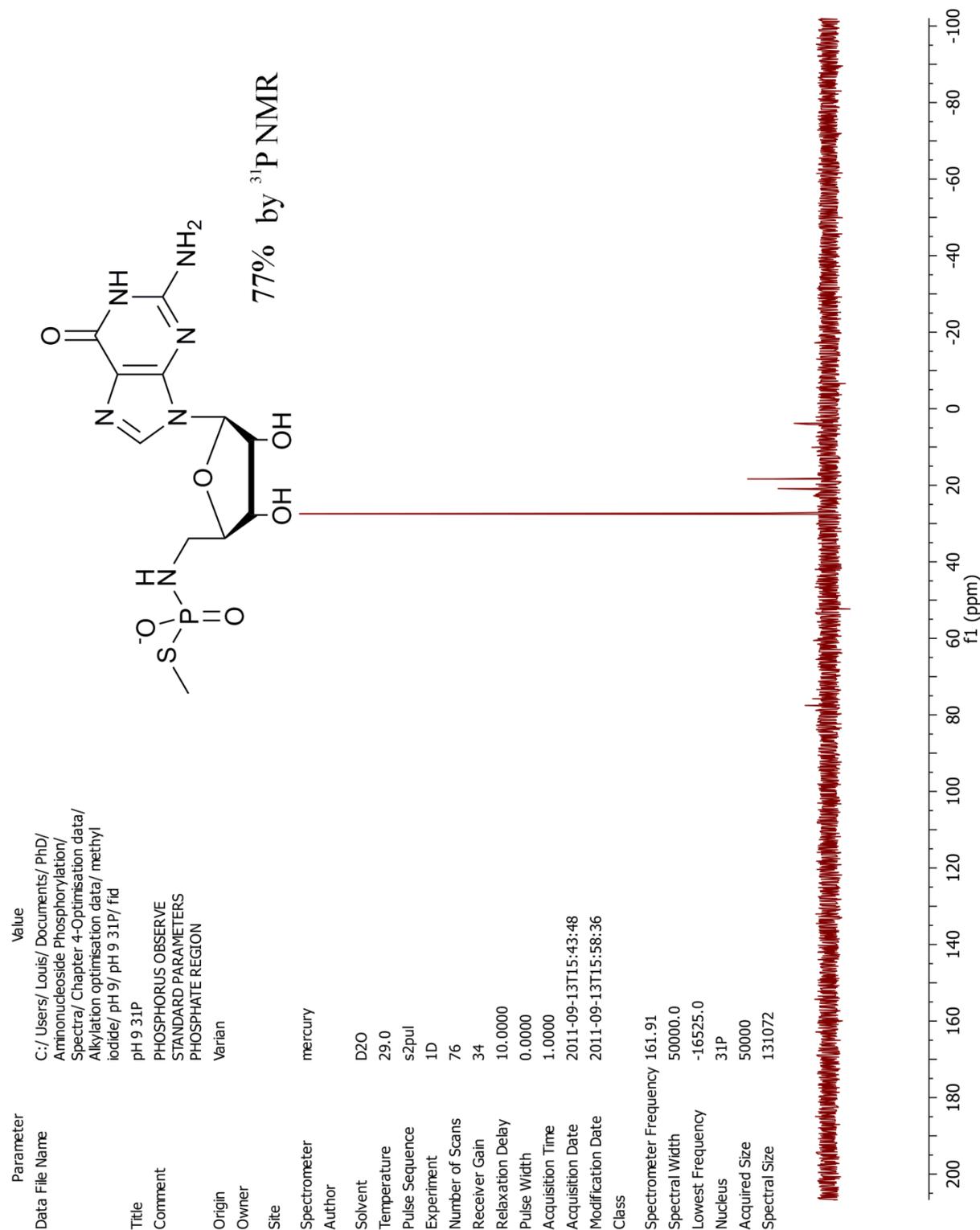
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 8, ³¹P NMR Spectrum



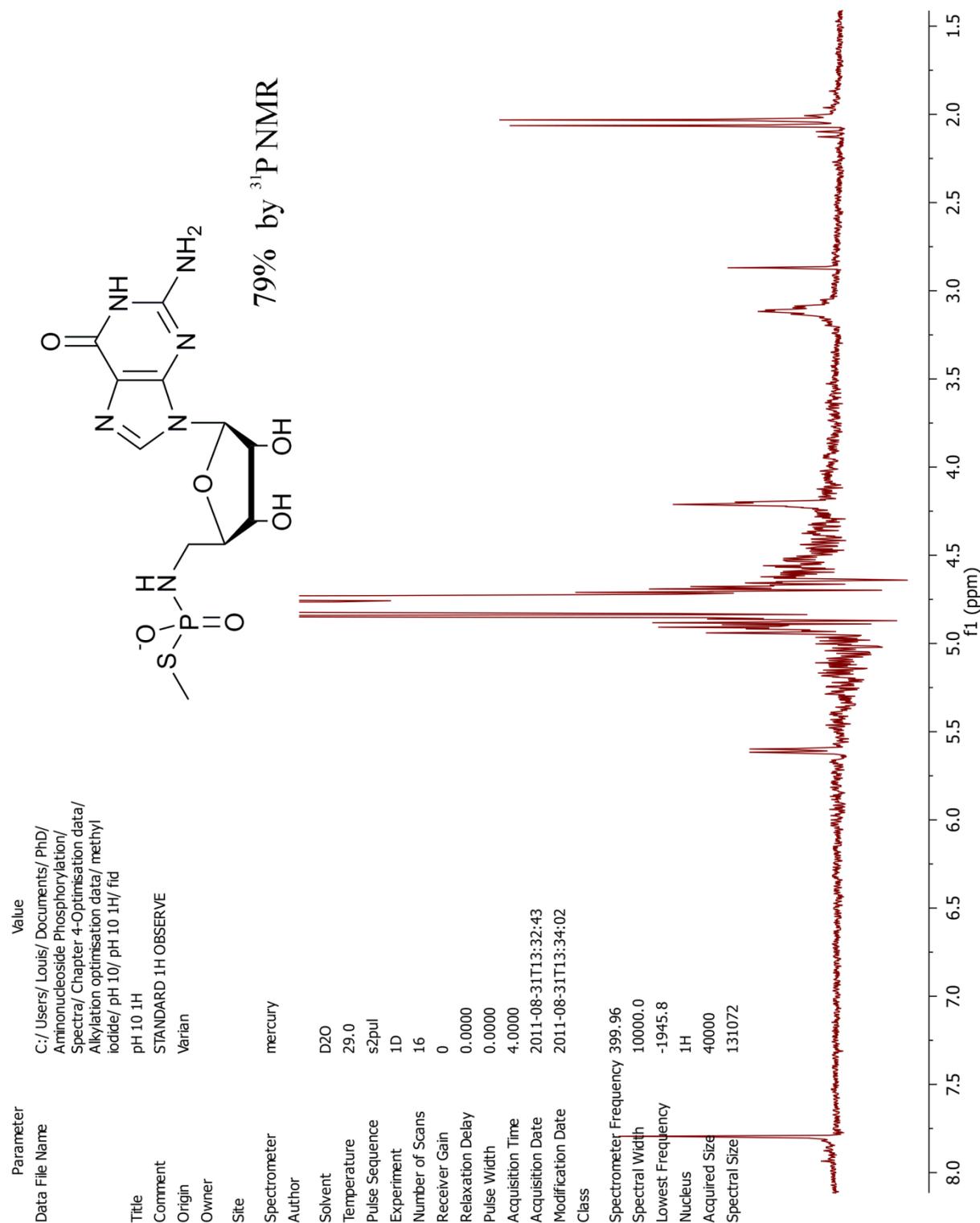
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 9, ¹H NMR Spectrum



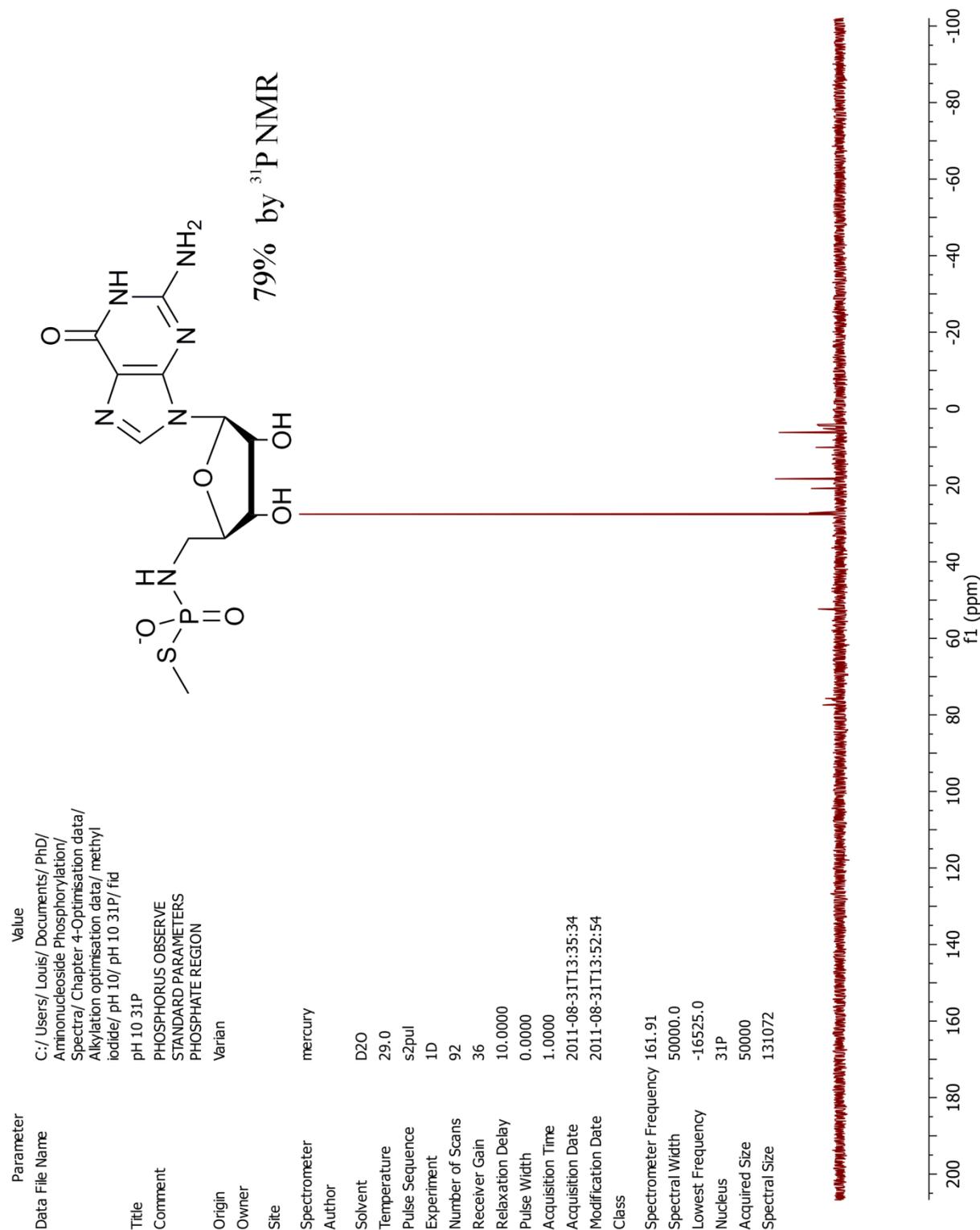
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 9, ^{31}P NMR Spectrum



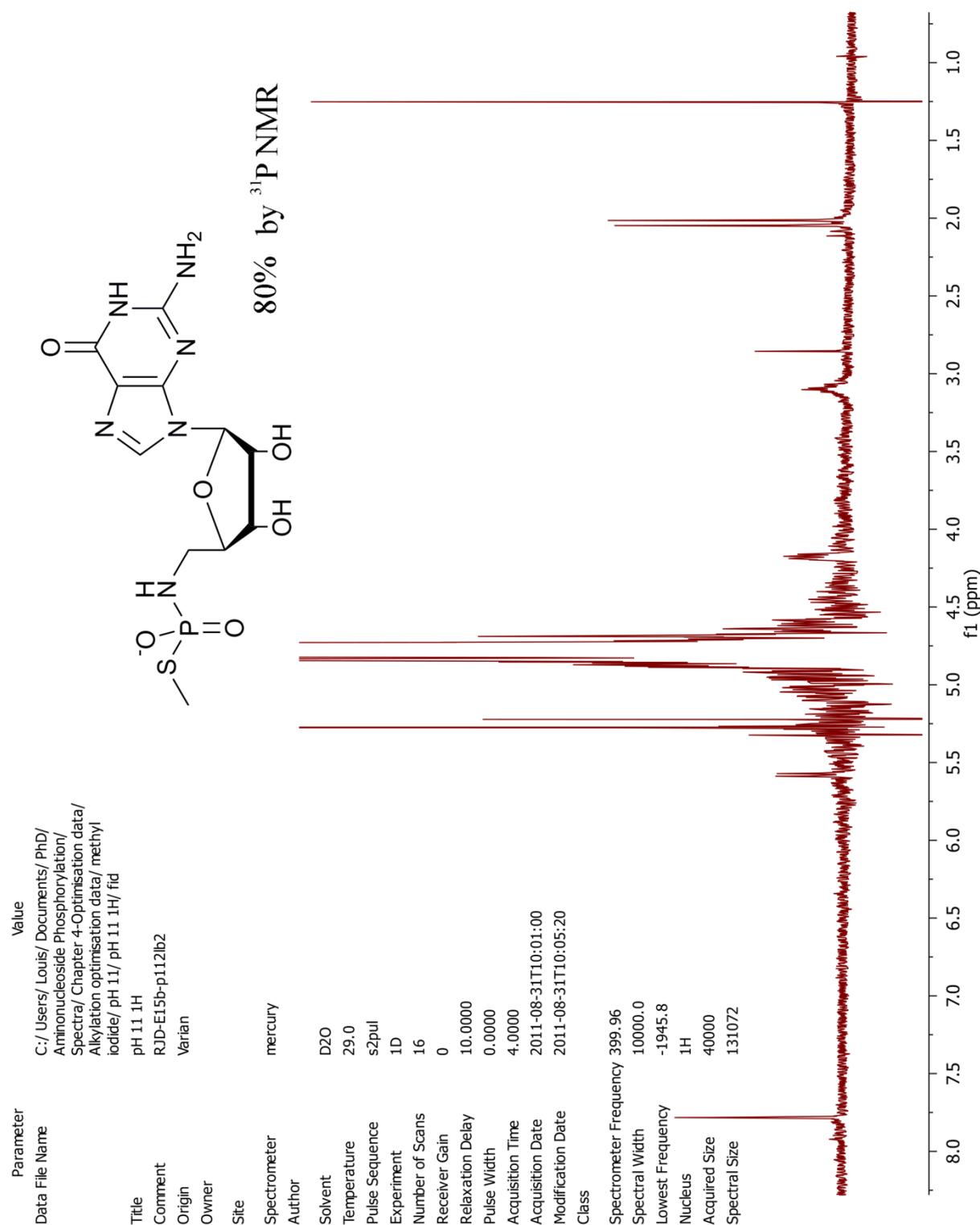
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 10, ¹H NMR Spectrum



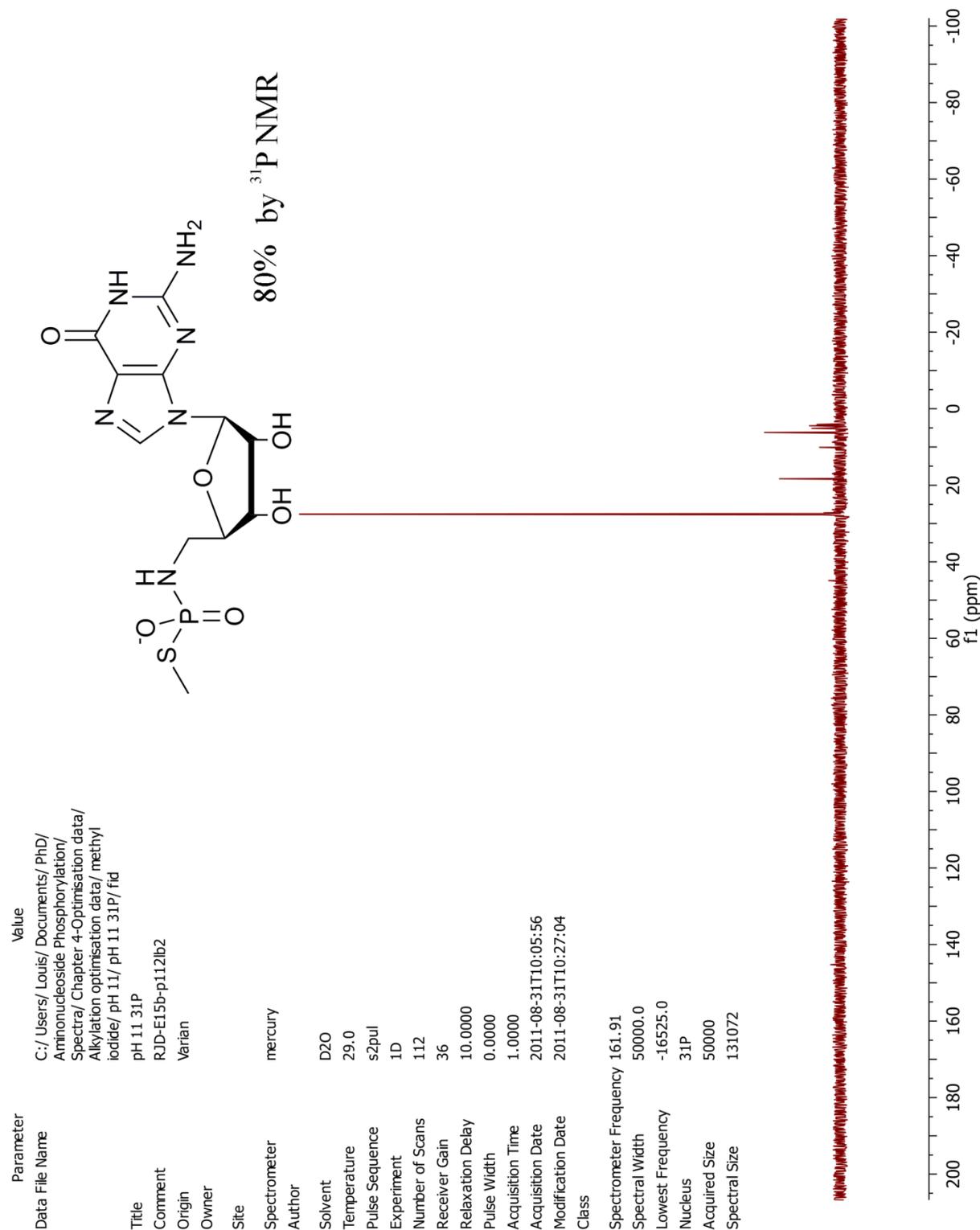
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 10, ^{31}P NMR Spectrum



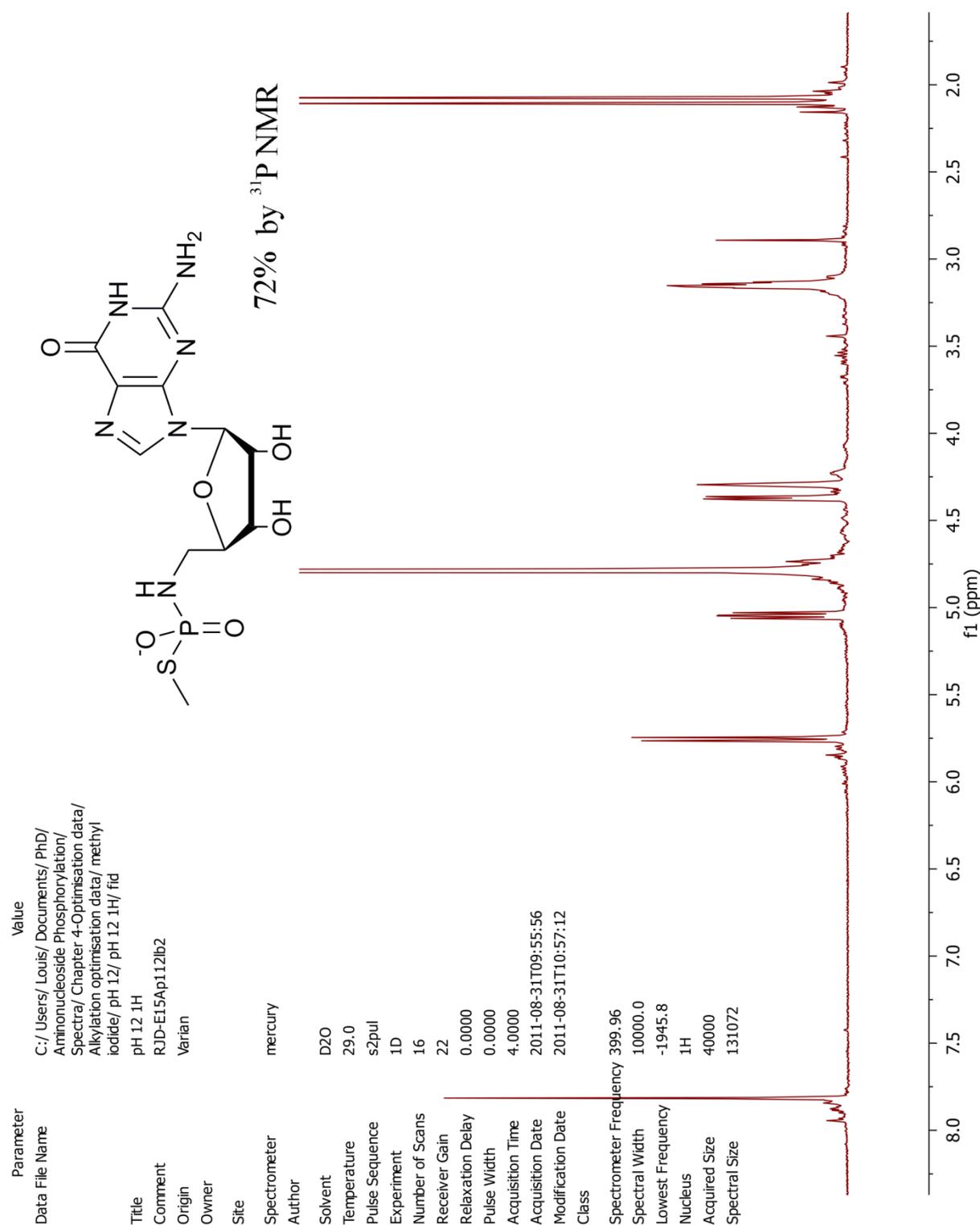
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 11, ¹H NMR Spectrum



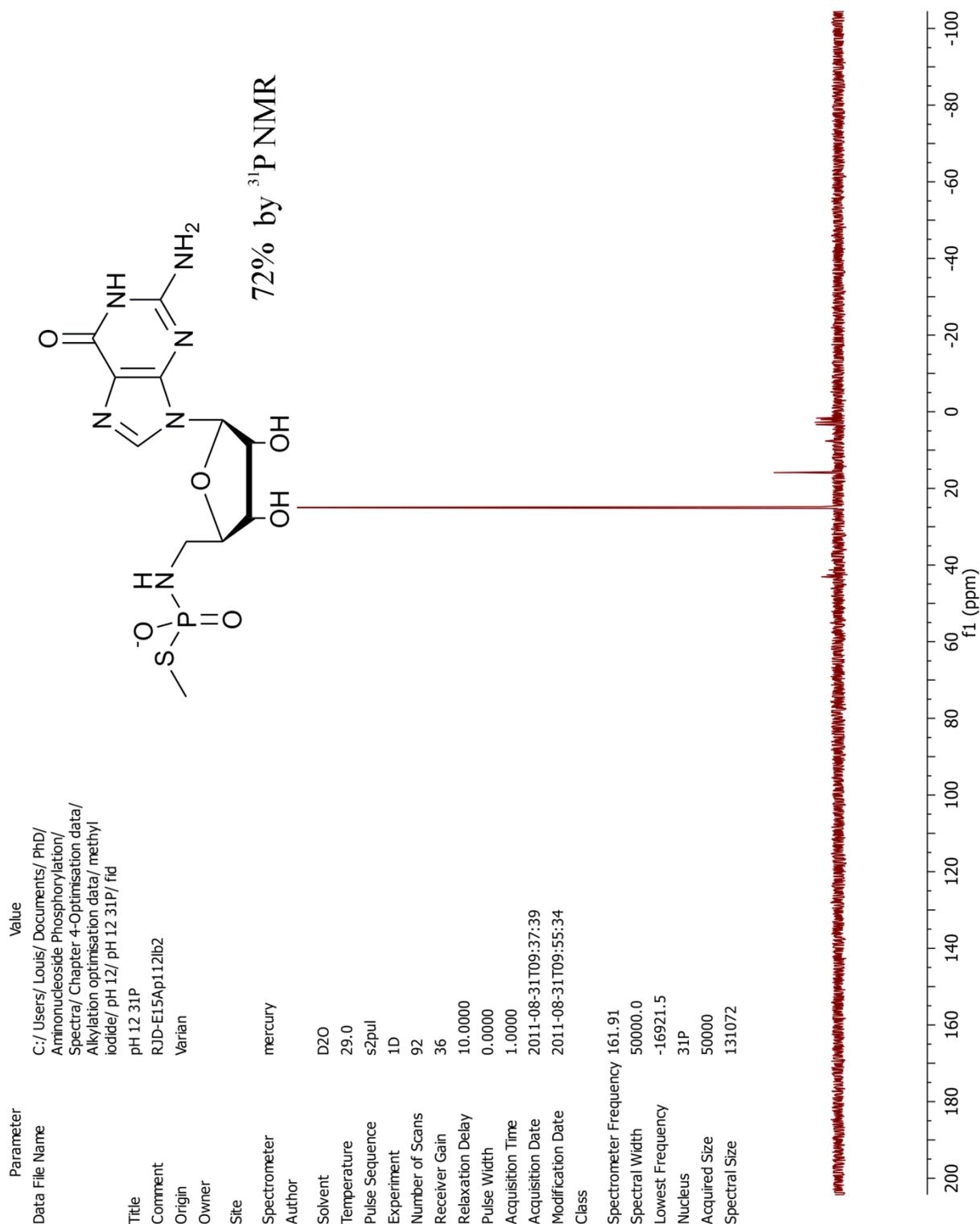
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 11, ³¹P NMR Spectrum



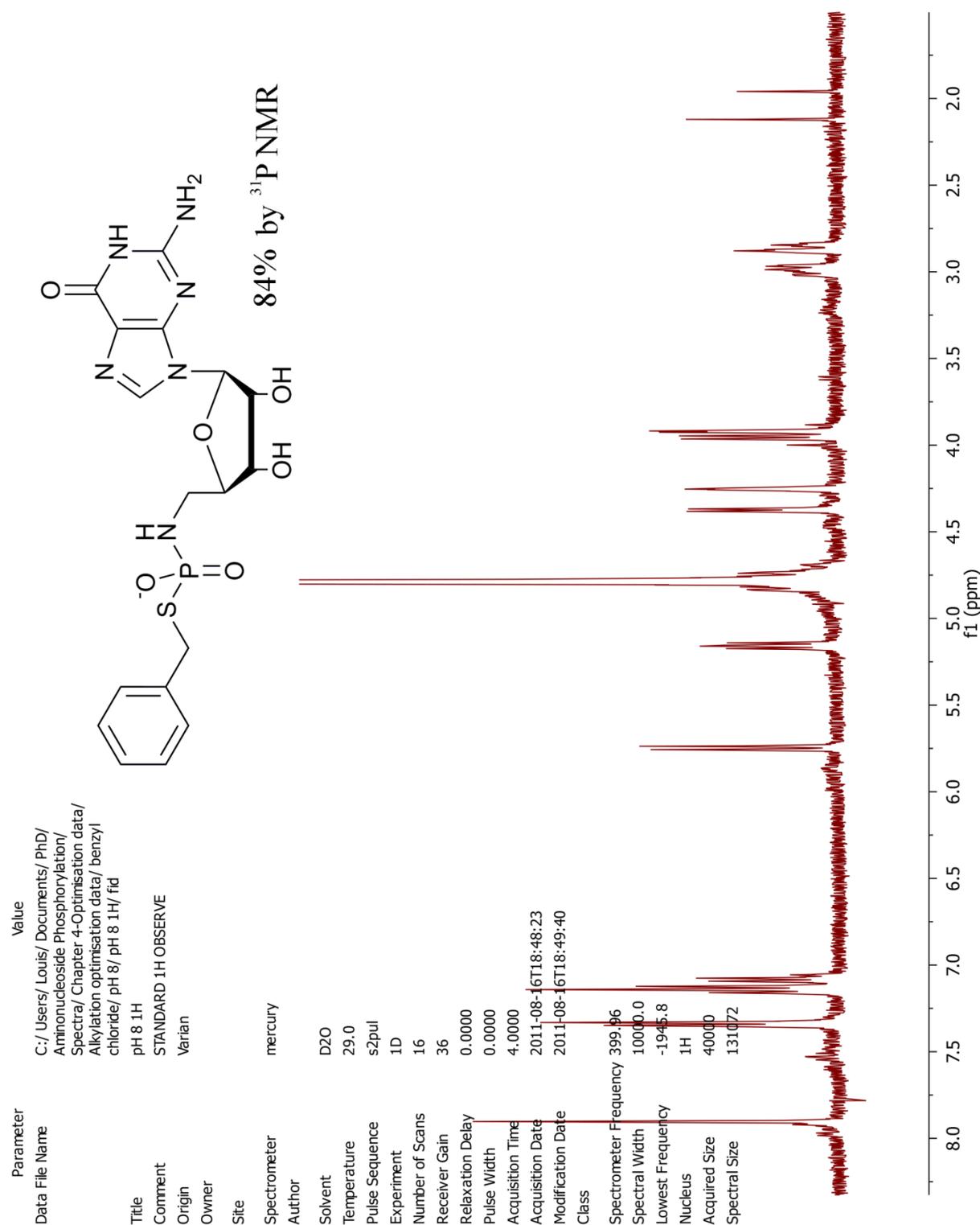
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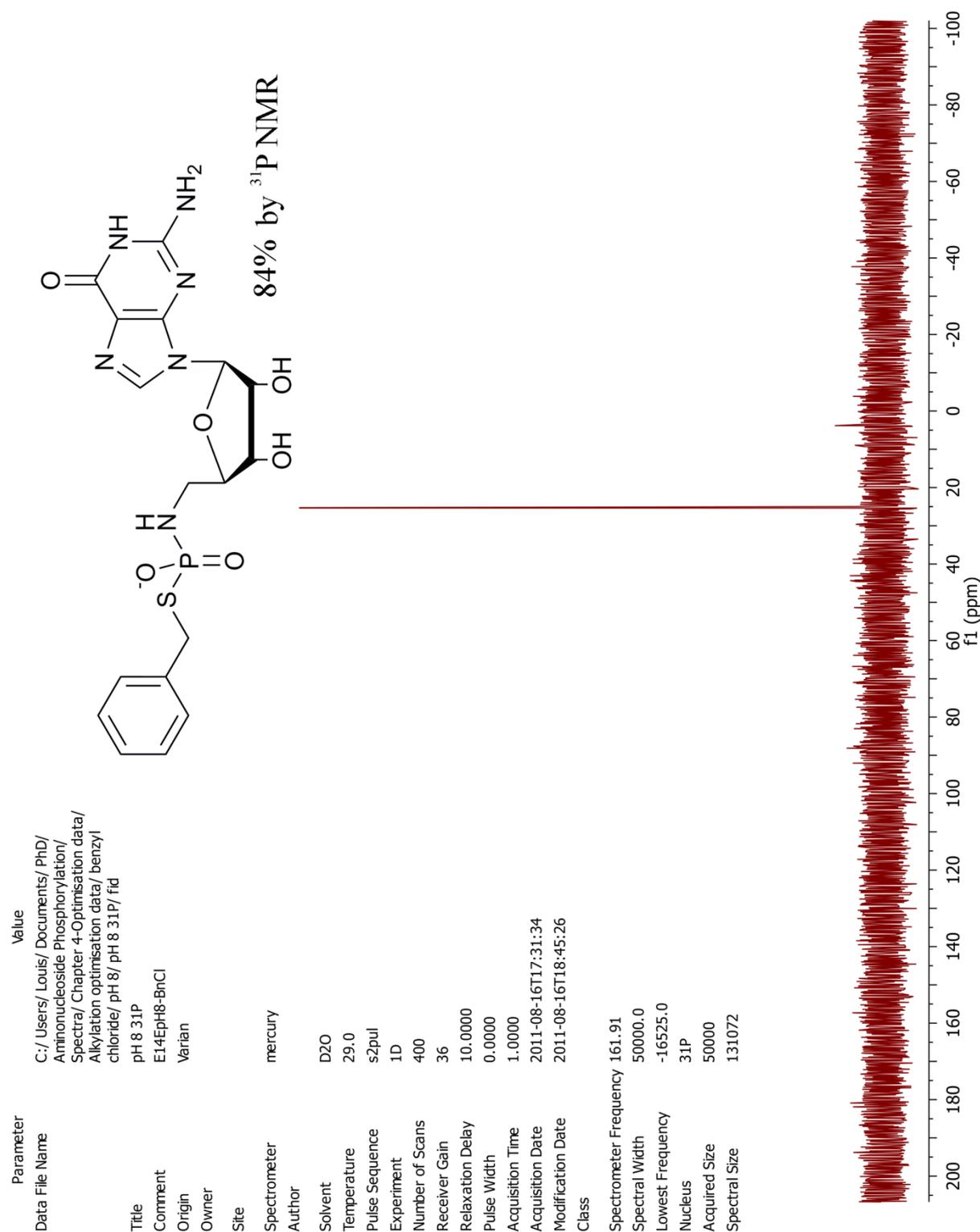
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Methyl Iodide, pH 12, ³¹P NMR Spectrum



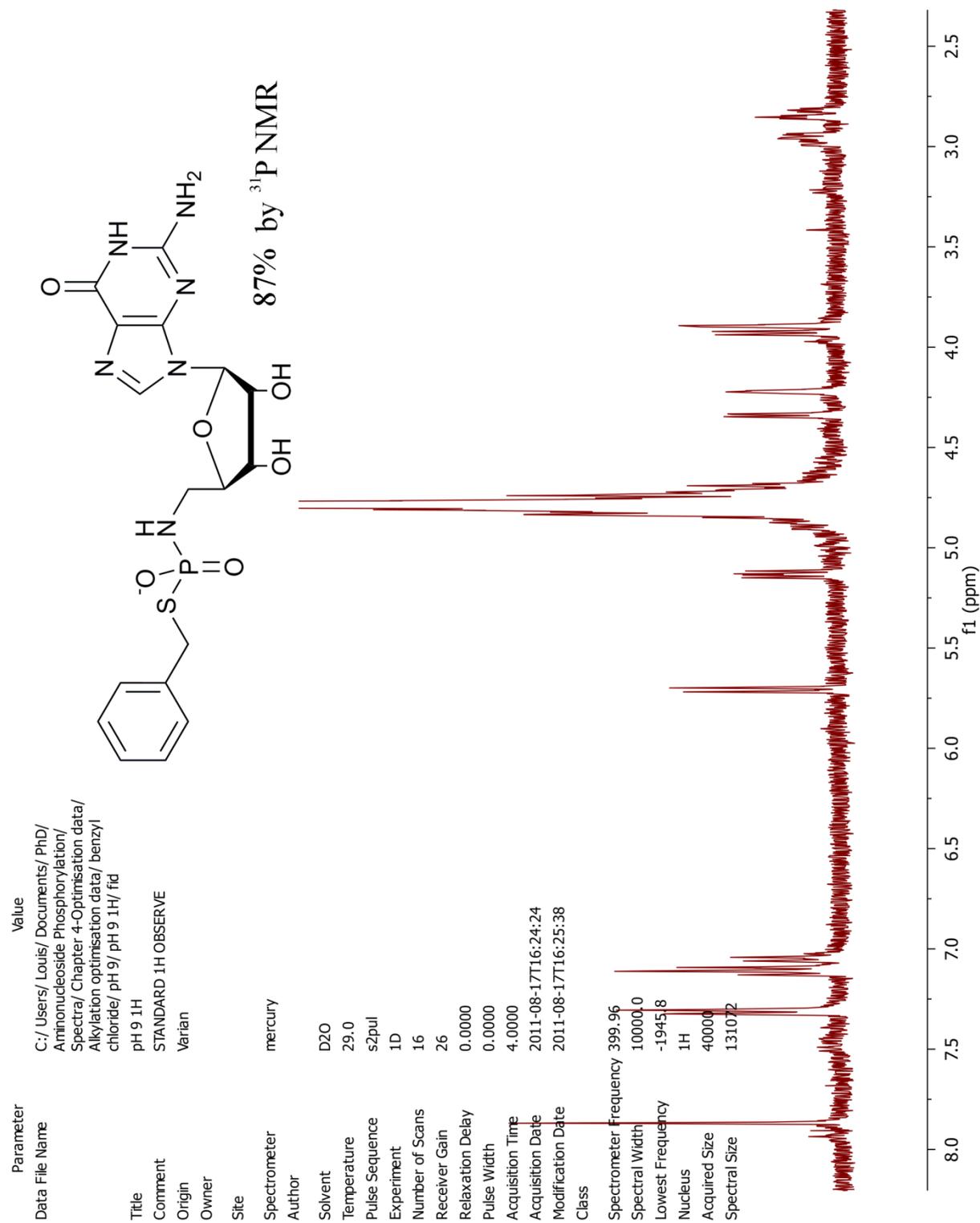
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Benzyl Chloride, pH 8, ¹H NMR Spectrum



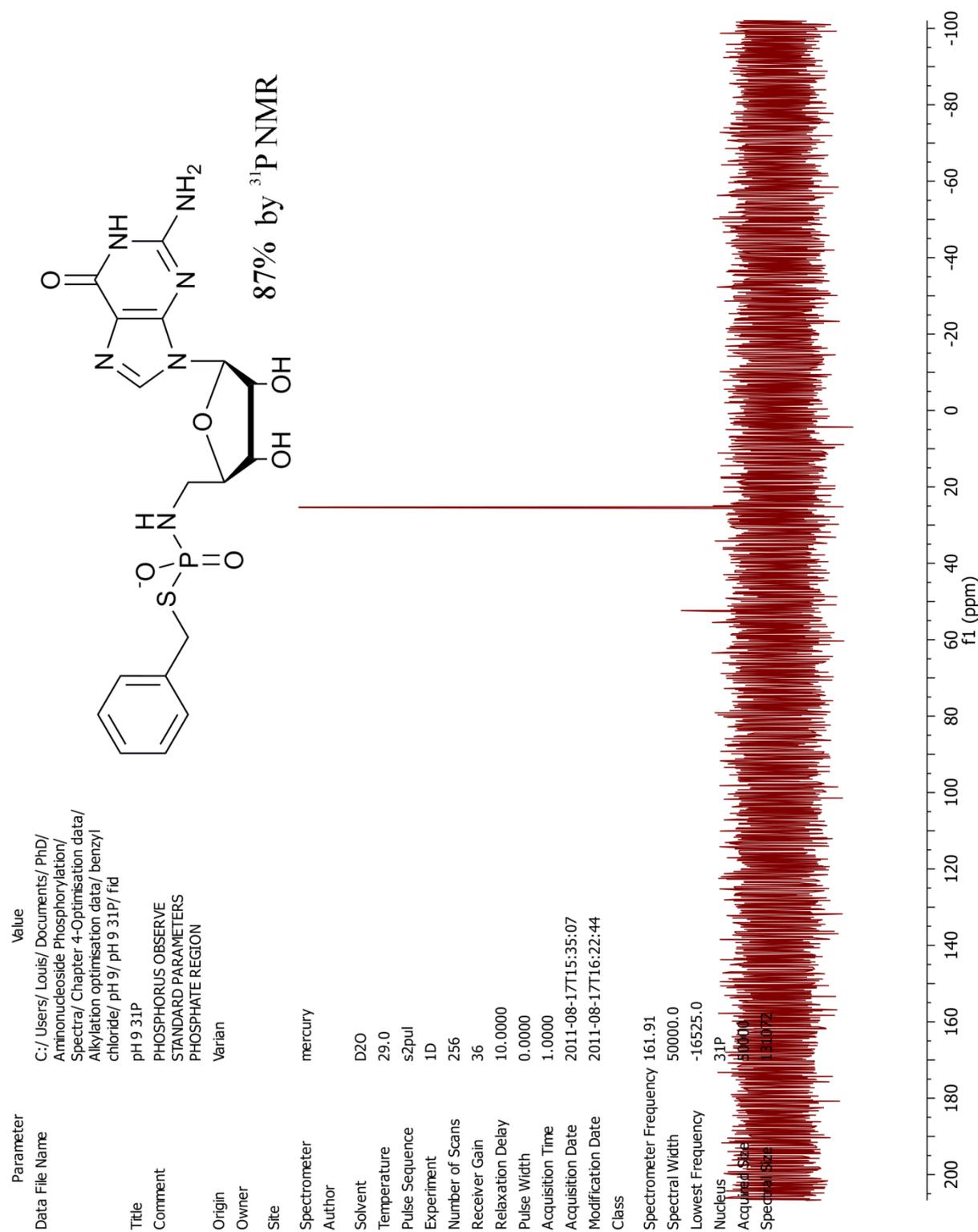
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Benzyl Chloride, pH 8, ³¹P NMR Spectrum



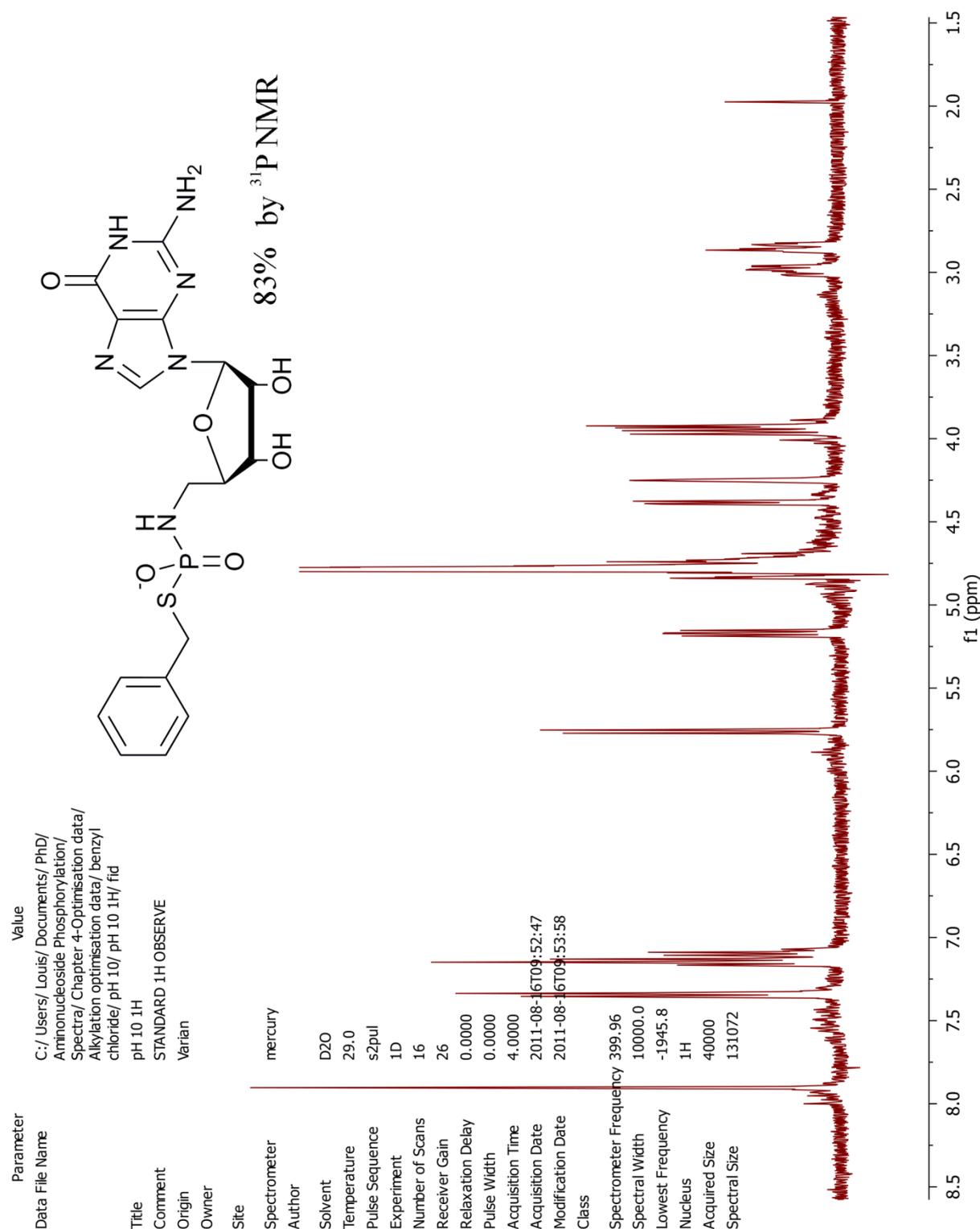
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Benzyl Chloride, pH 9, ¹H NMR Spectrum



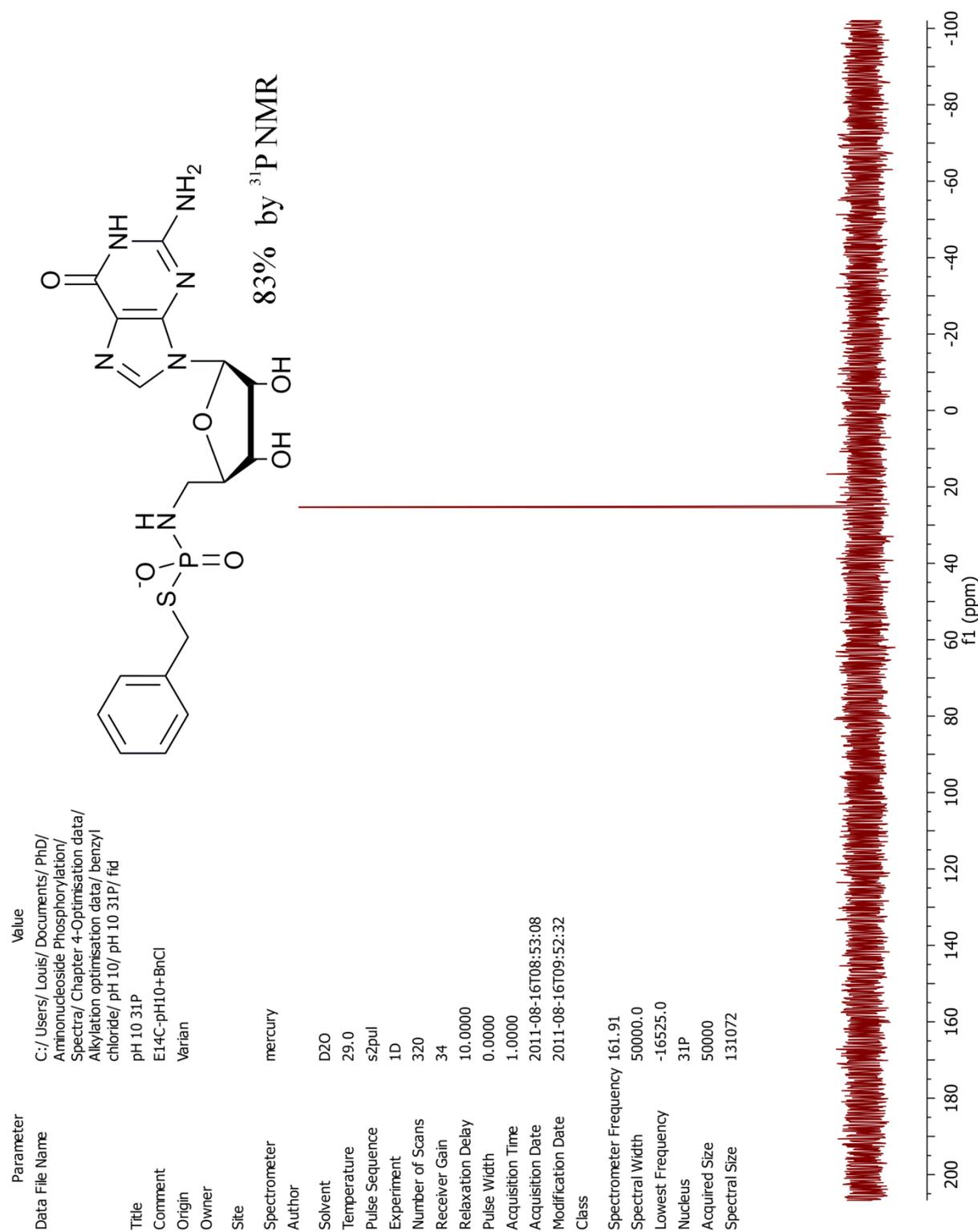
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Benzyl Chloride, pH 9, ³¹P NMR Spectrum



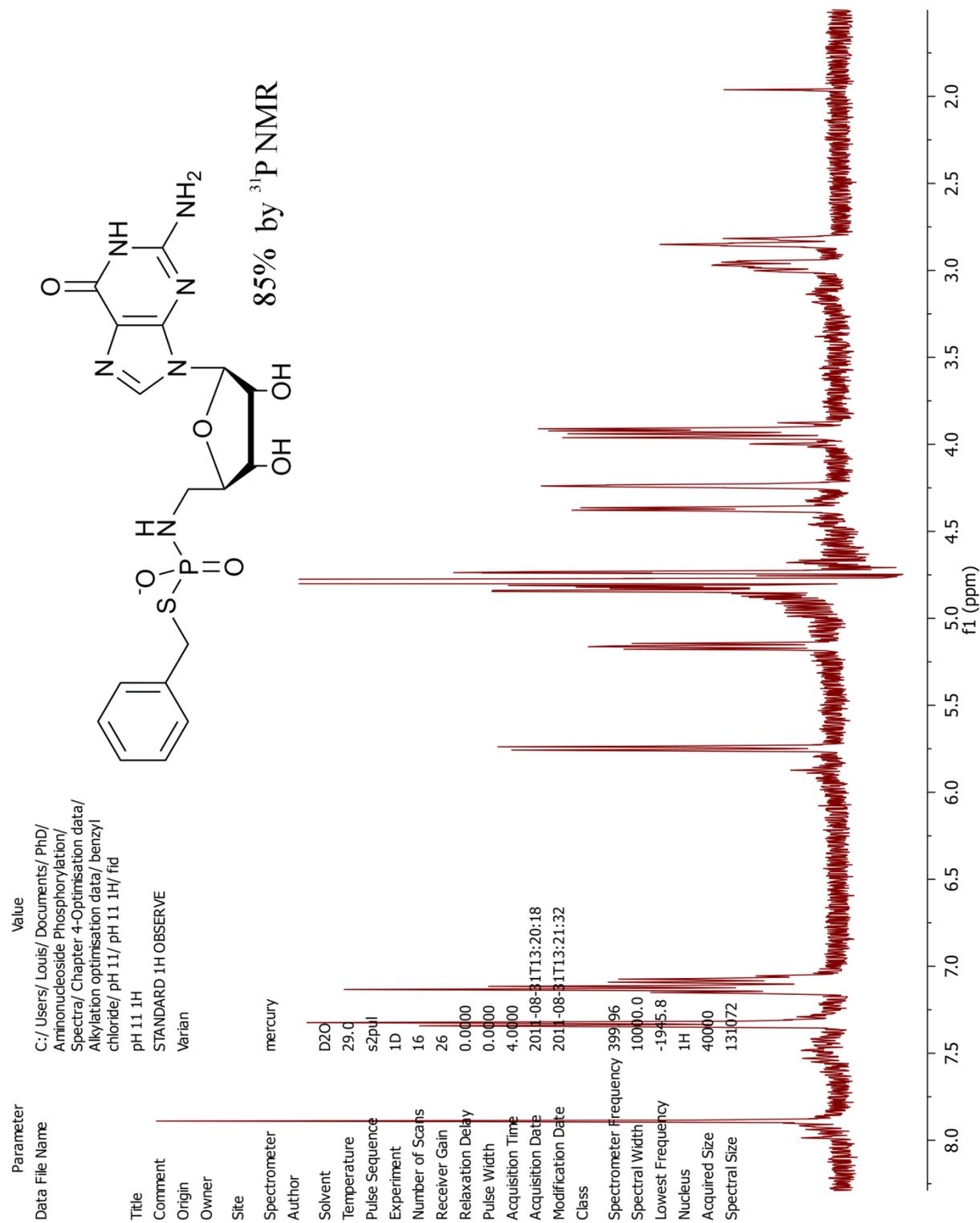
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Benzyl Chloride, pH 10, ¹H NMR Spectrum



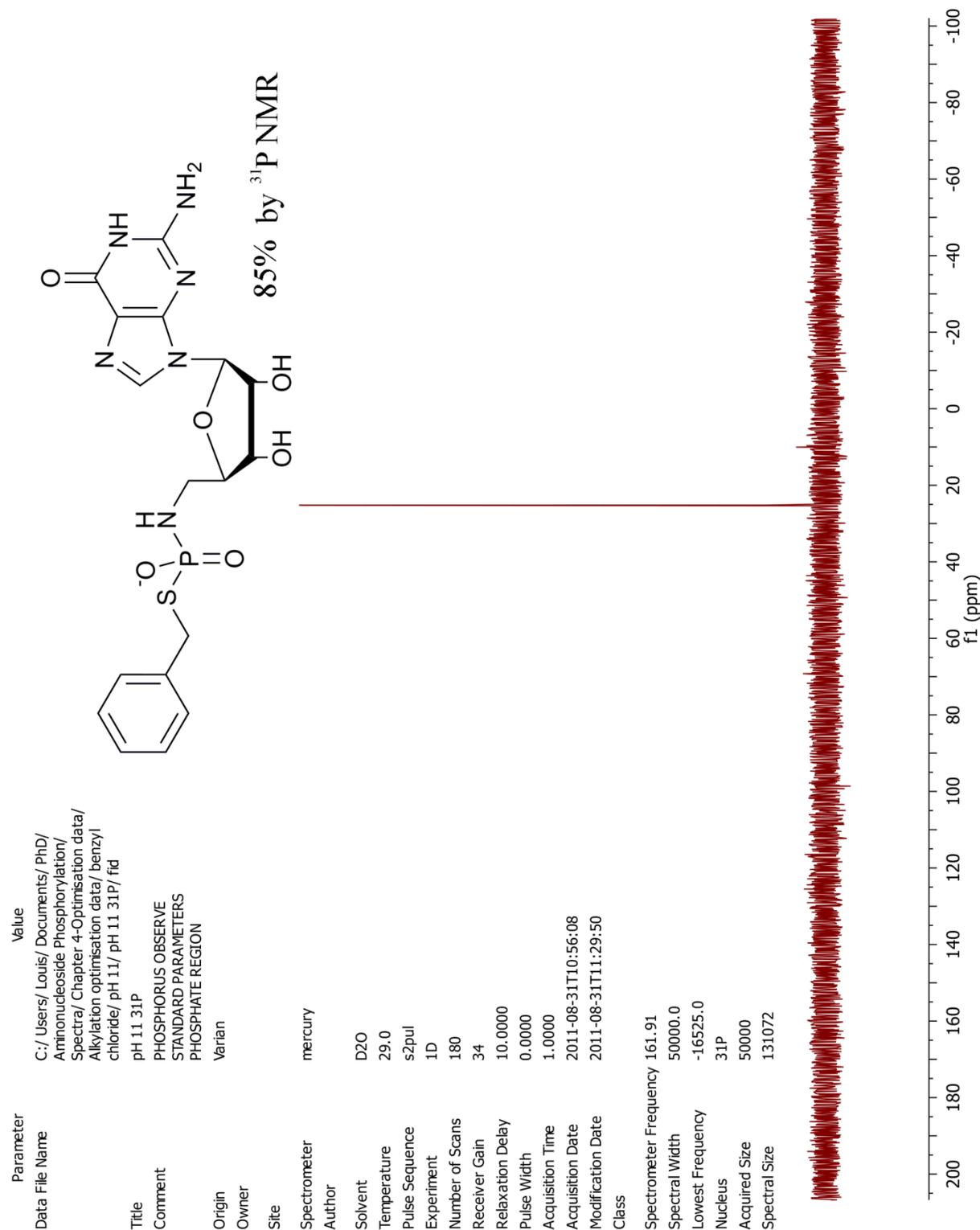
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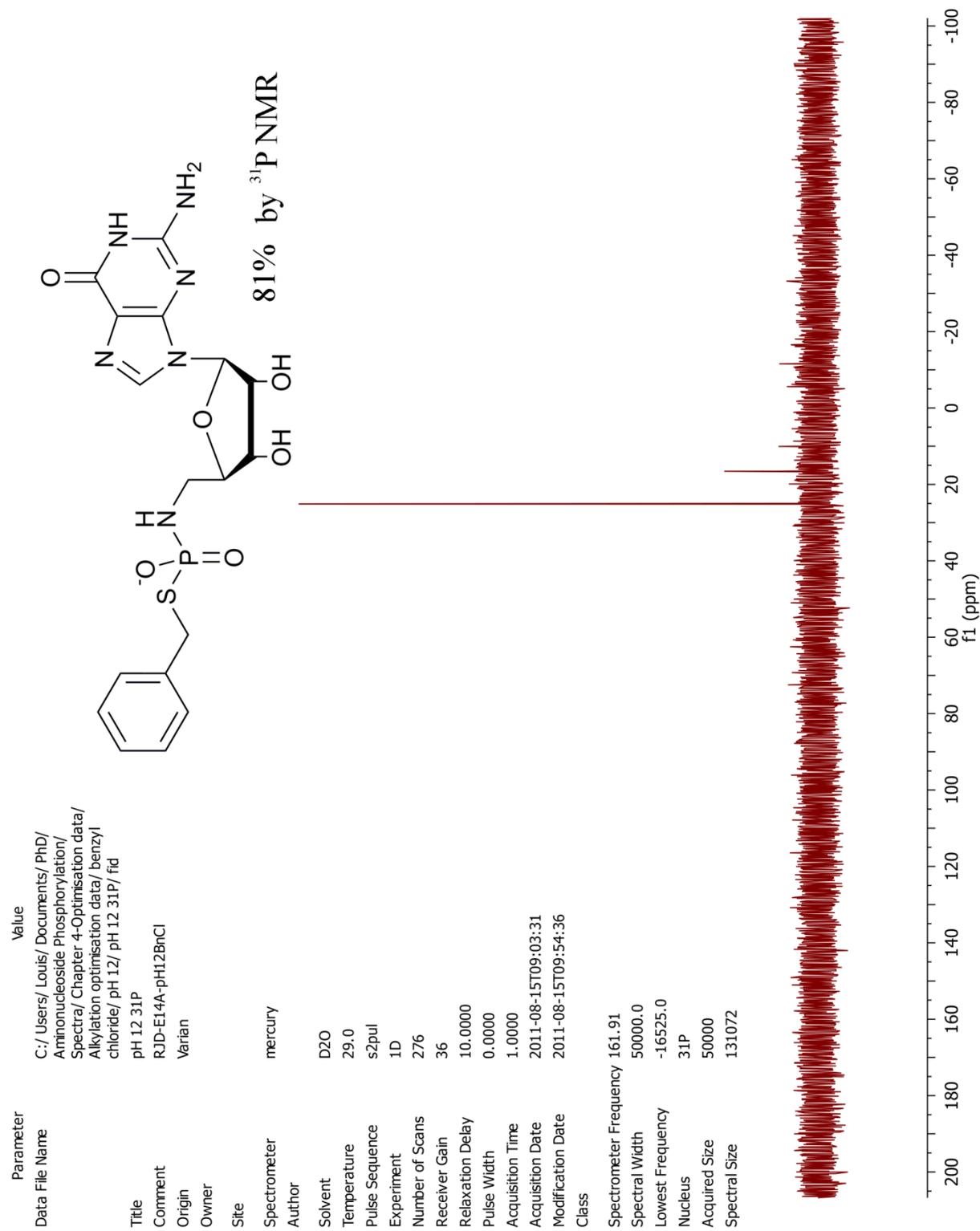
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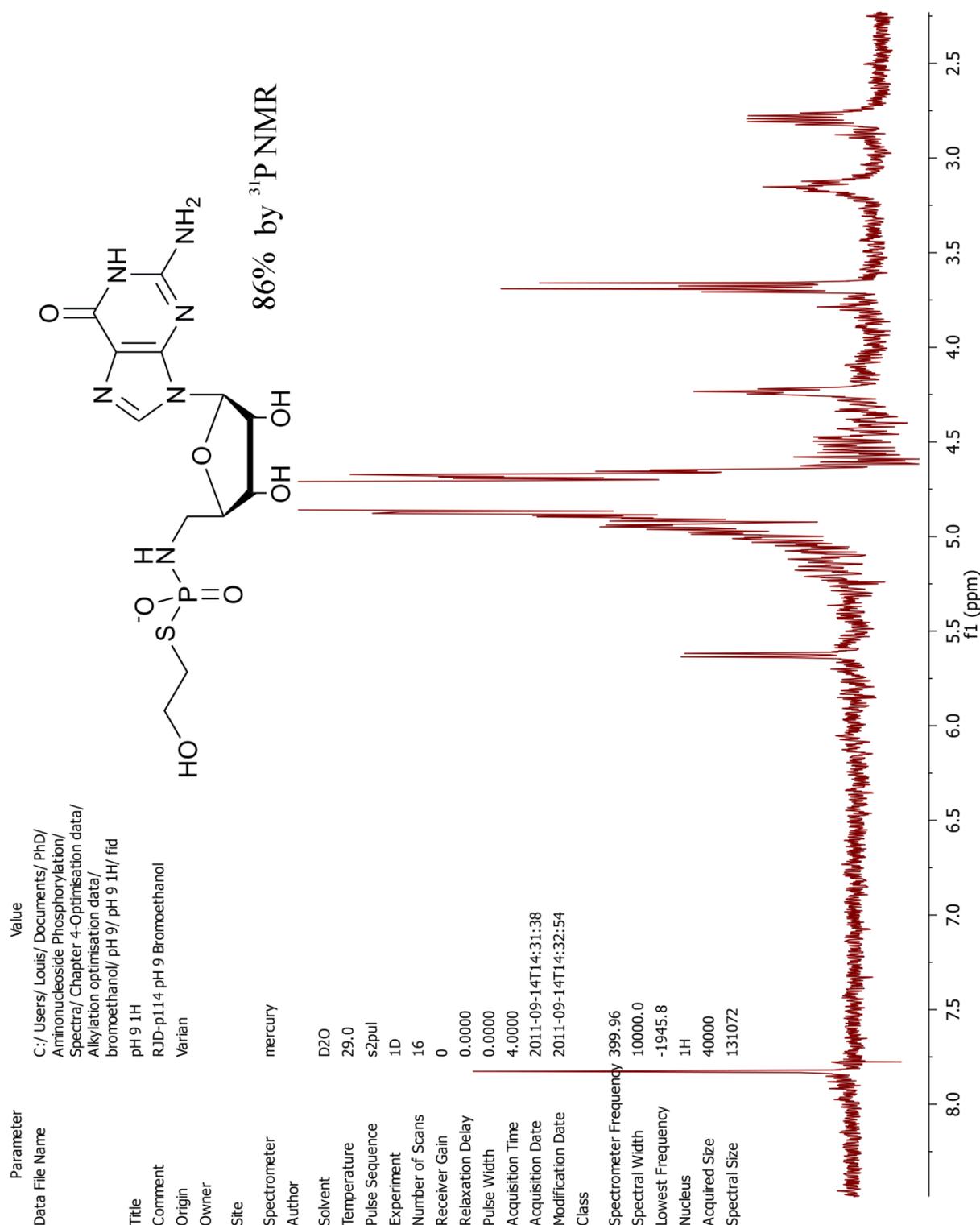
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Benzyl Chloride, pH 11, ^{31}P NMR Spectrum



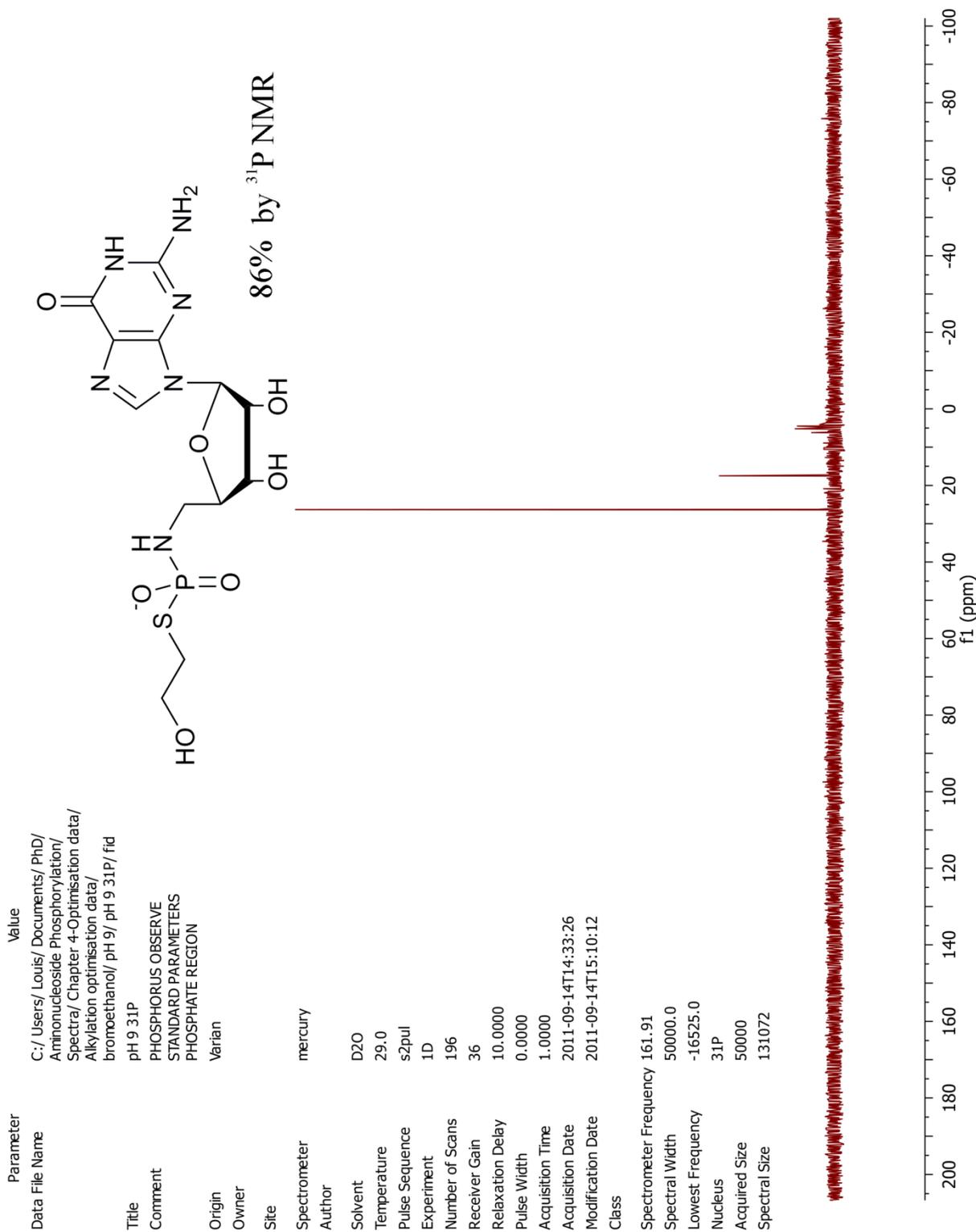
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with Benzyl Chloride, pH 12, ³¹P NMR Spectrum



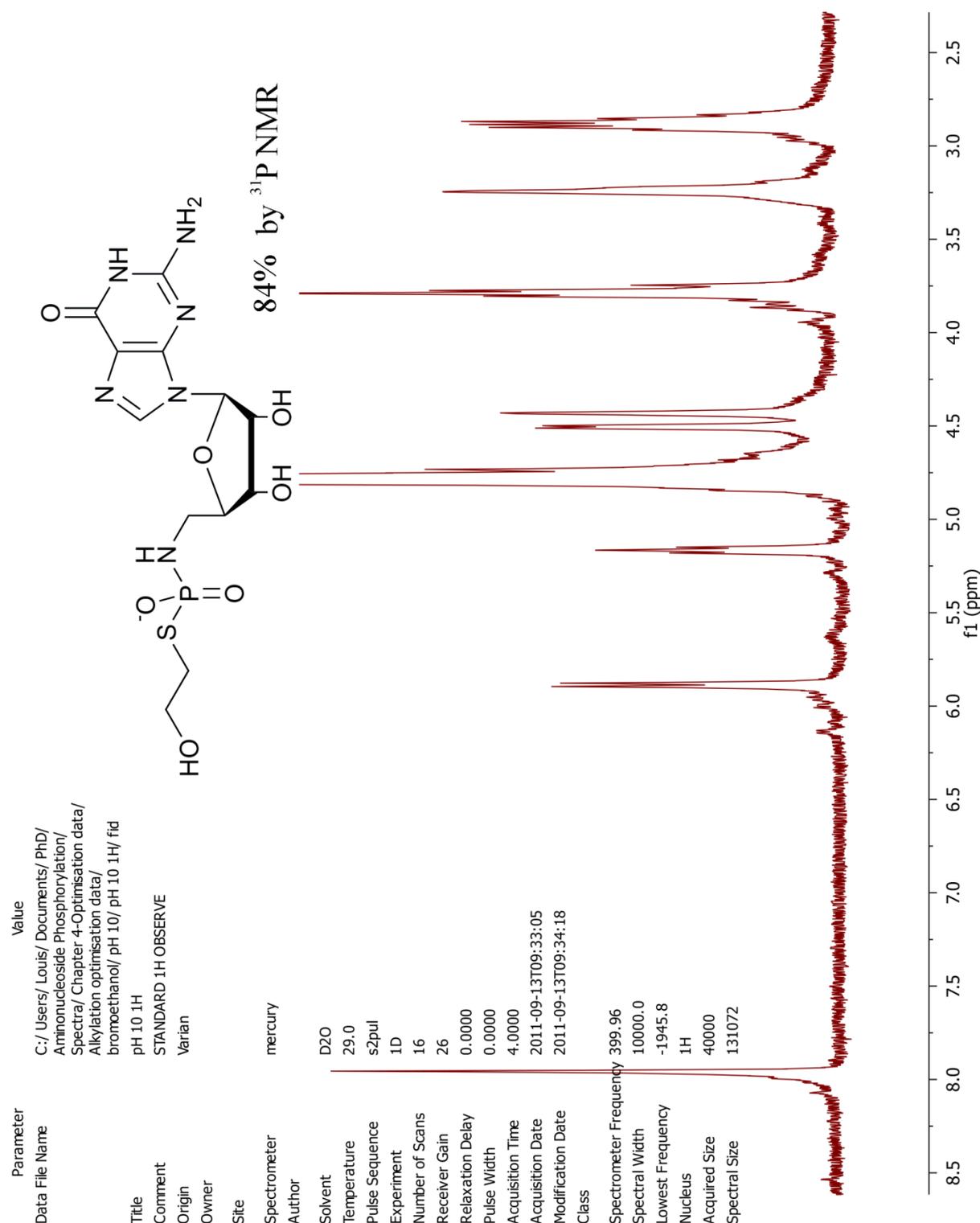
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with 2-Bromoethanol, pH 9, ¹H NMR Spectrum



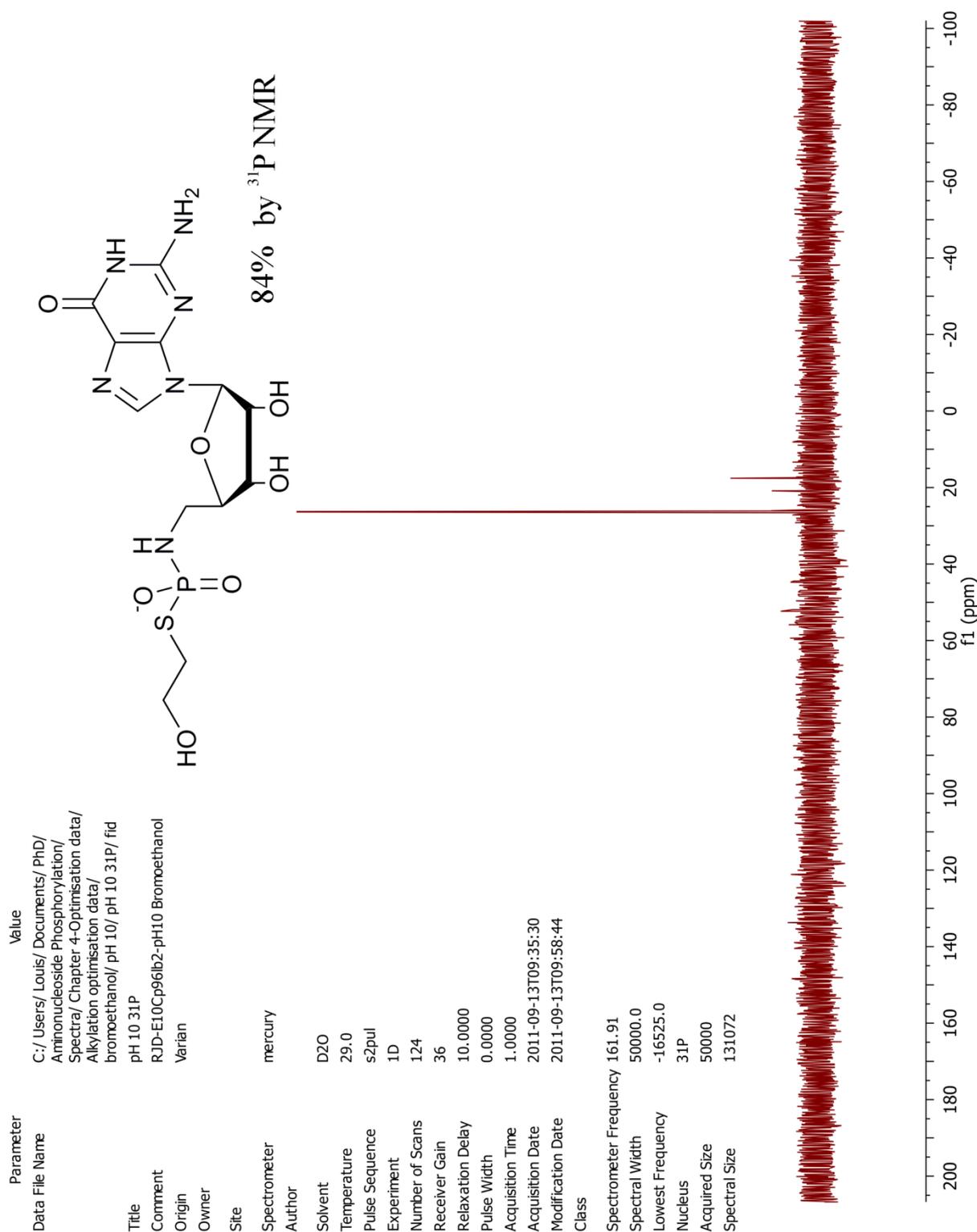
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with 2-Bromoethanol, pH 9, ³¹P NMR Spectrum



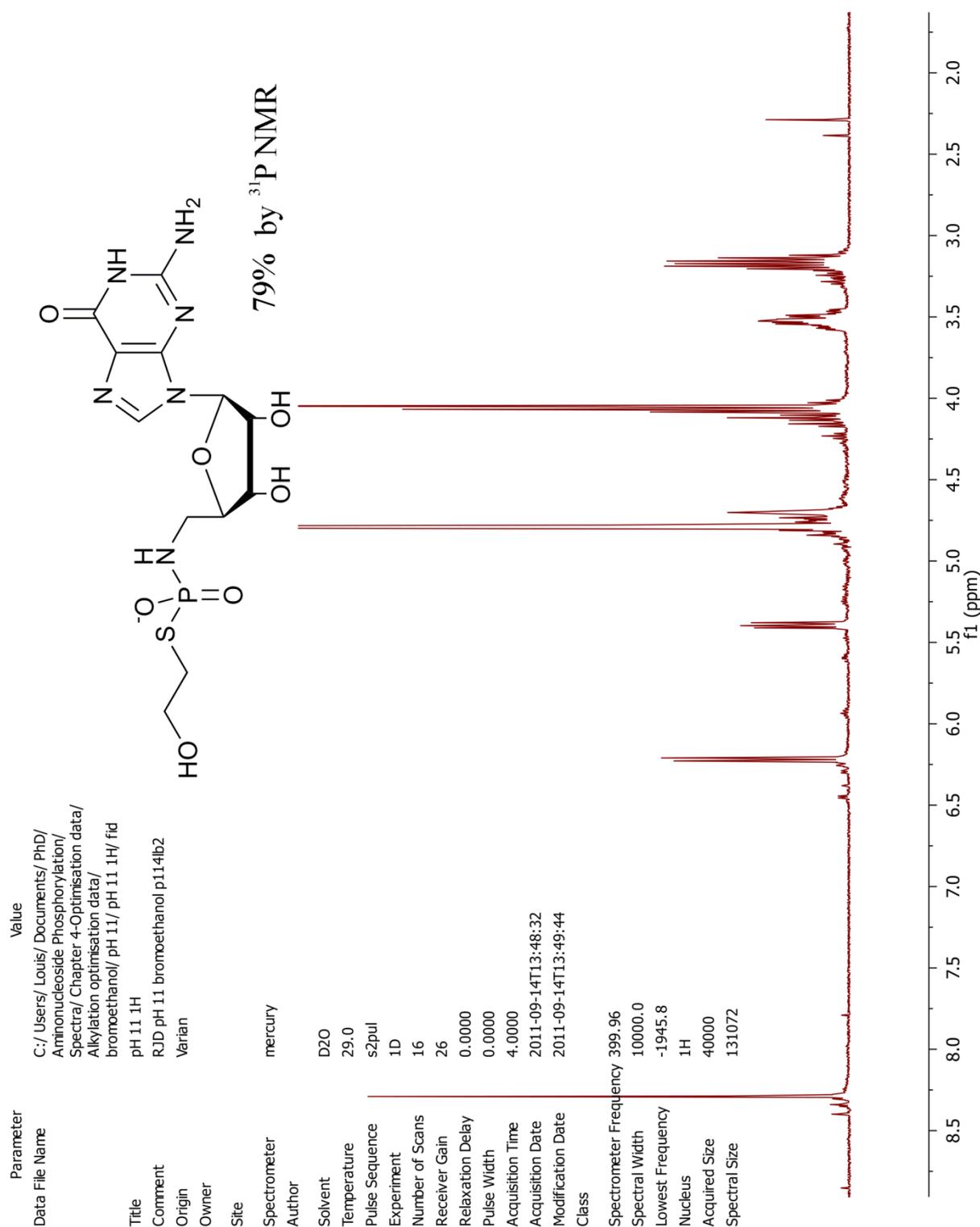
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with 2-Bromoethanol, pH 10, ¹H NMR Spectrum



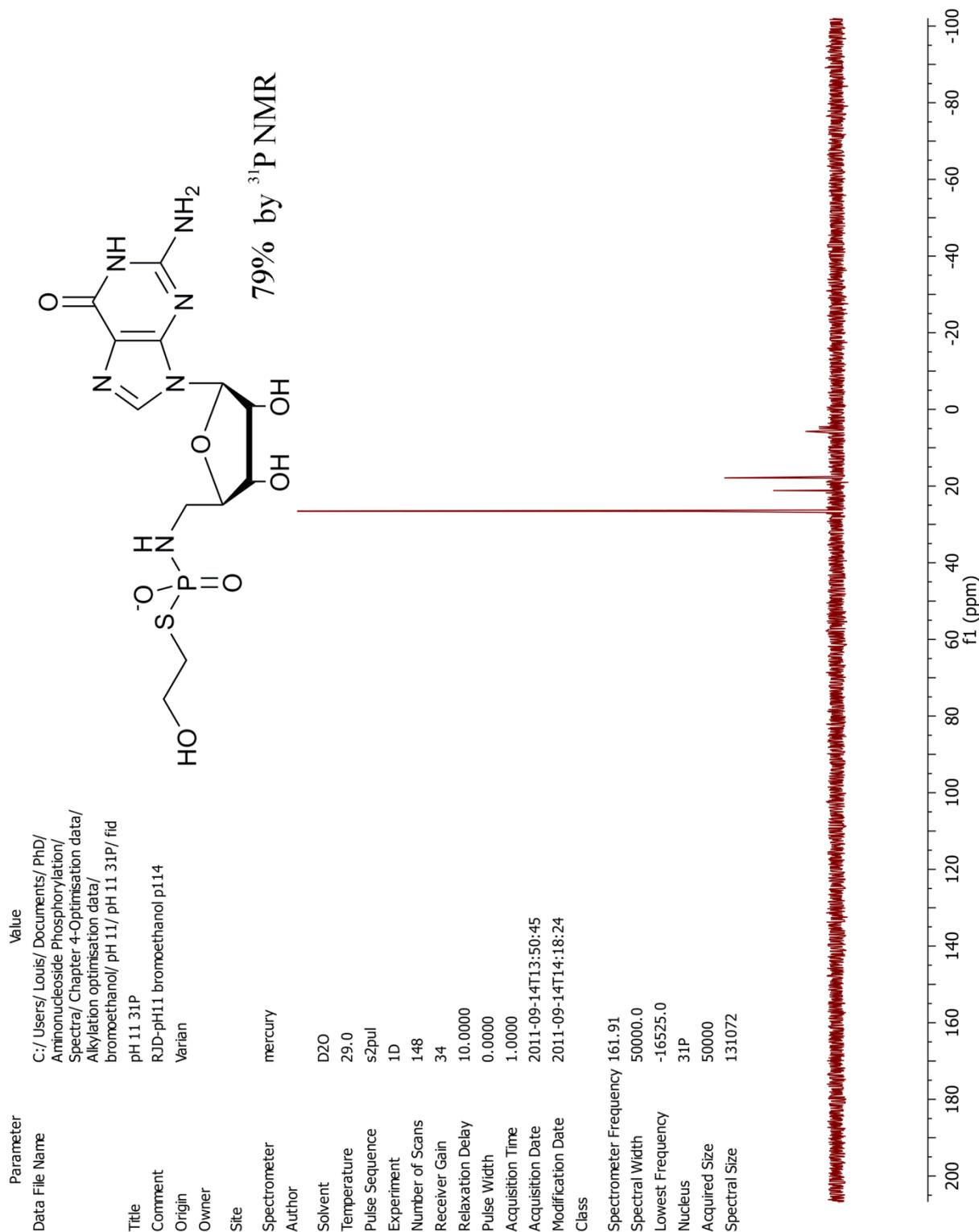
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with 2-Bromoethanol, pH 10, ^{31}P NMR Spectrum



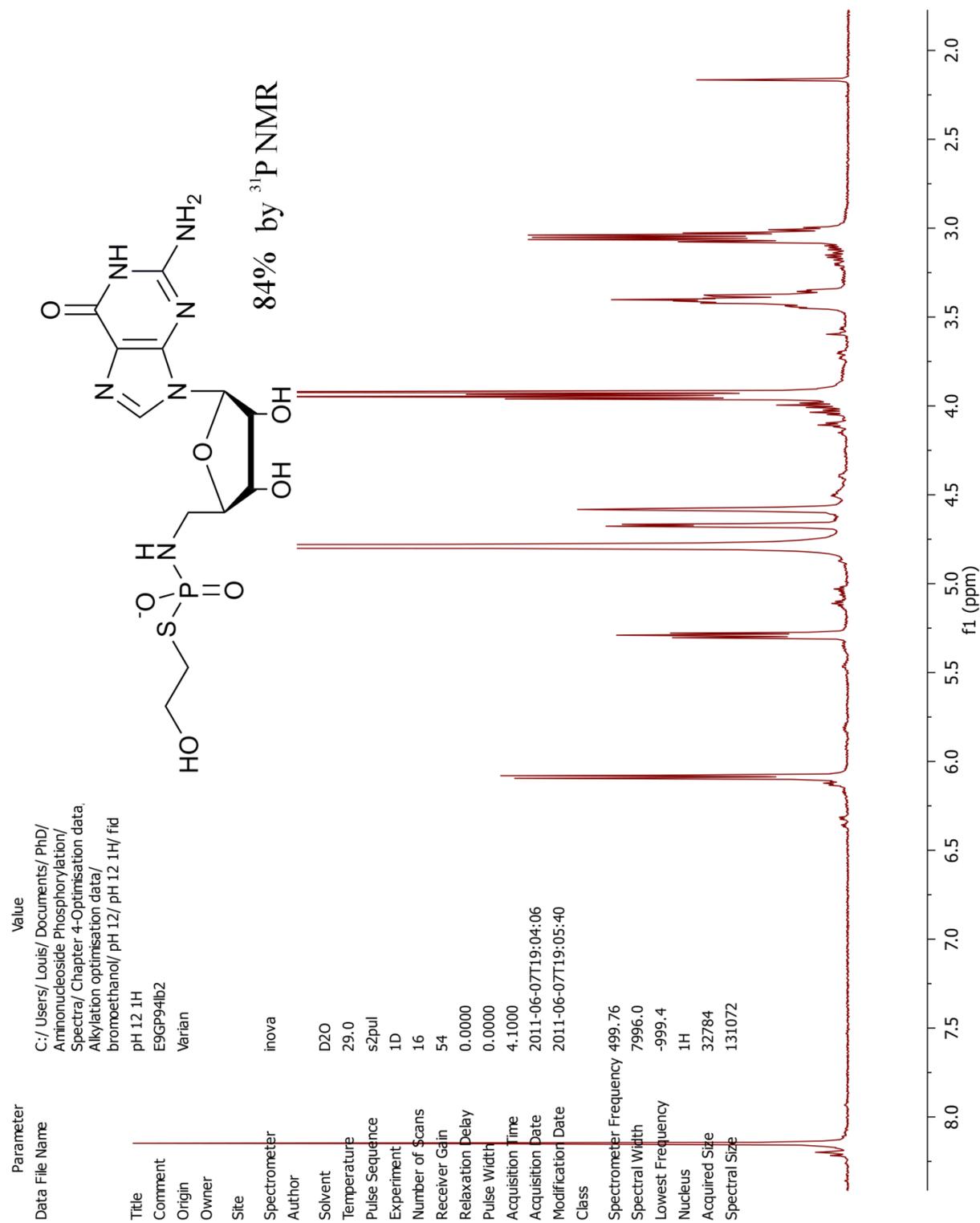
5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with 2-Bromoethanol, pH 11, ¹H NMR Spectrum



5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with 2-Bromoethanol, pH 11, ³¹P NMR Spectrum



5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with 2-Bromoethanol, pH 12, ¹H NMR Spectrum

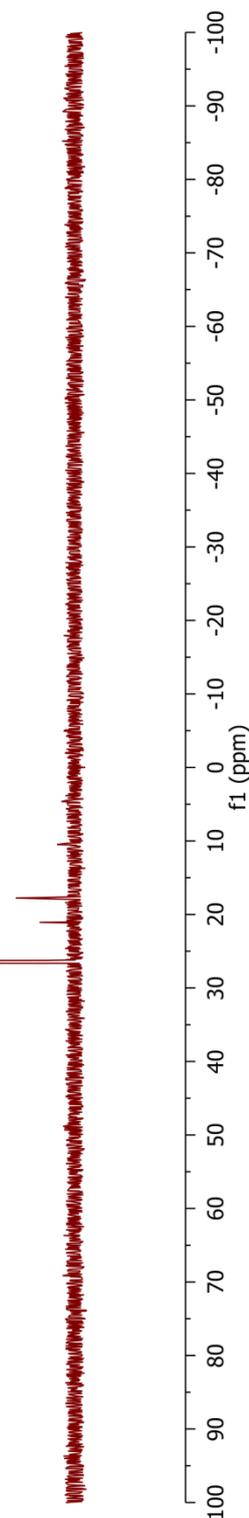
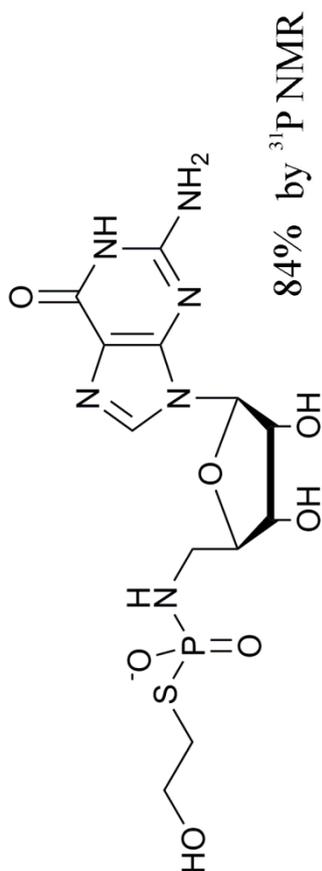


5'-Deoxyguanosine-5'-N-thiophosphoramidate Alkylation with 2-Bromoethanol, pH 12, ^{31}P NMR Spectrum

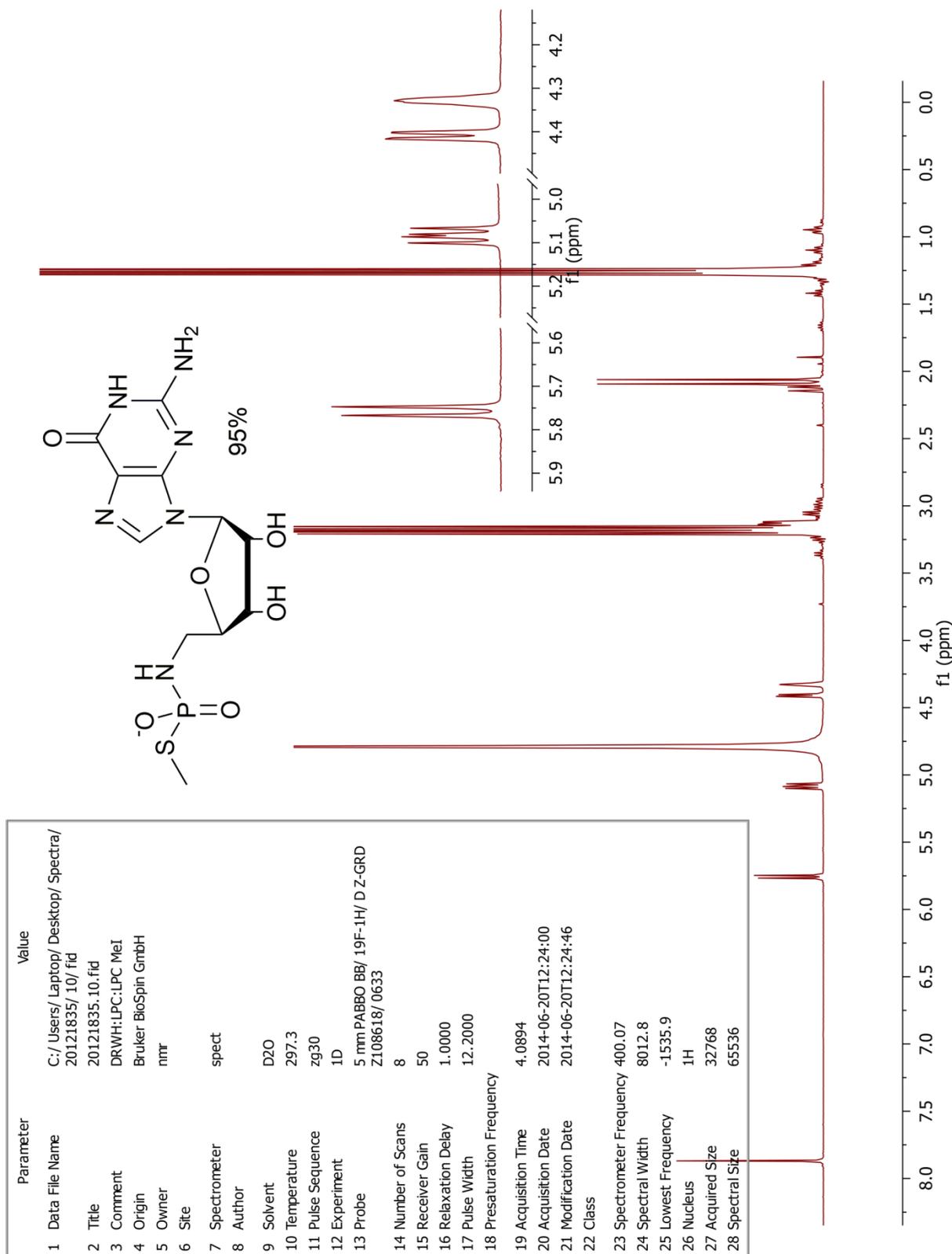
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Title pH 12 31P
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 Spectrometer inova
 Author
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 Experiment 1D
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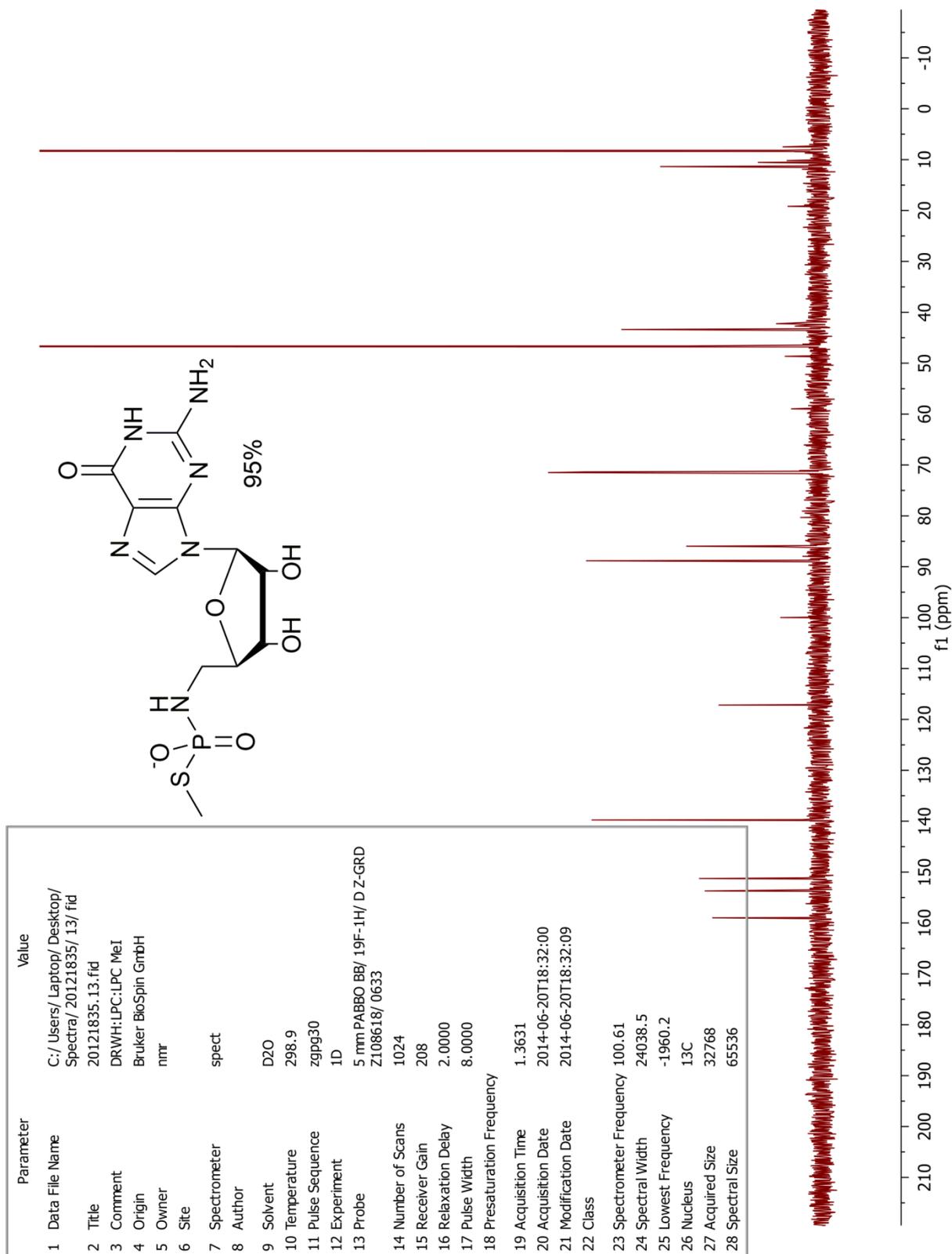
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 Nucleus ^{31}P
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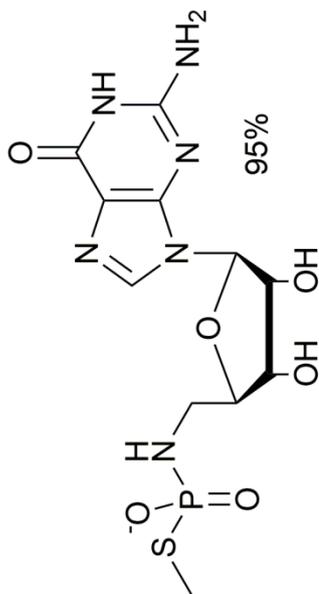
5'-Amino-5'-deoxyguanosine, *N,S*-methylthio - phosphoramidate, Triethylammonium salt ¹H NMR Spectrum



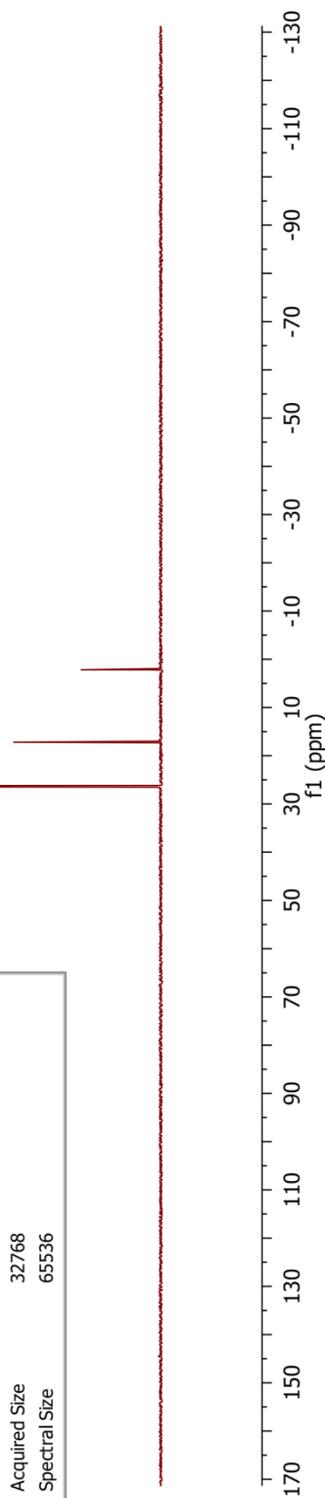
5'-Amino-5'-deoxyguanosine, *N,S*-methylthio - phosphoramidate, Triethylammonium salt ¹³C NMR Spectrum



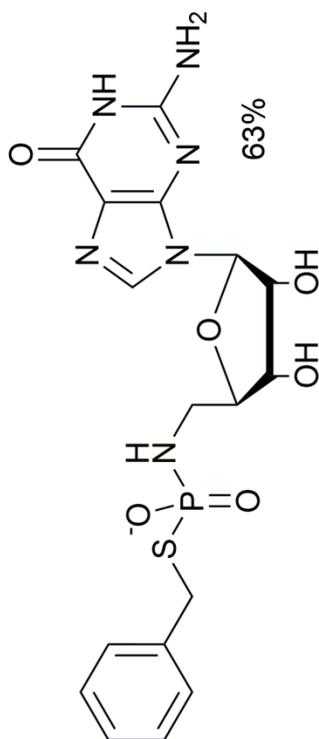
5'-Amino-5'-deoxyguanosine, *N,S*-methylthio - phosphoramidate, Triethylammonium salt ³¹P NMR Spectrum



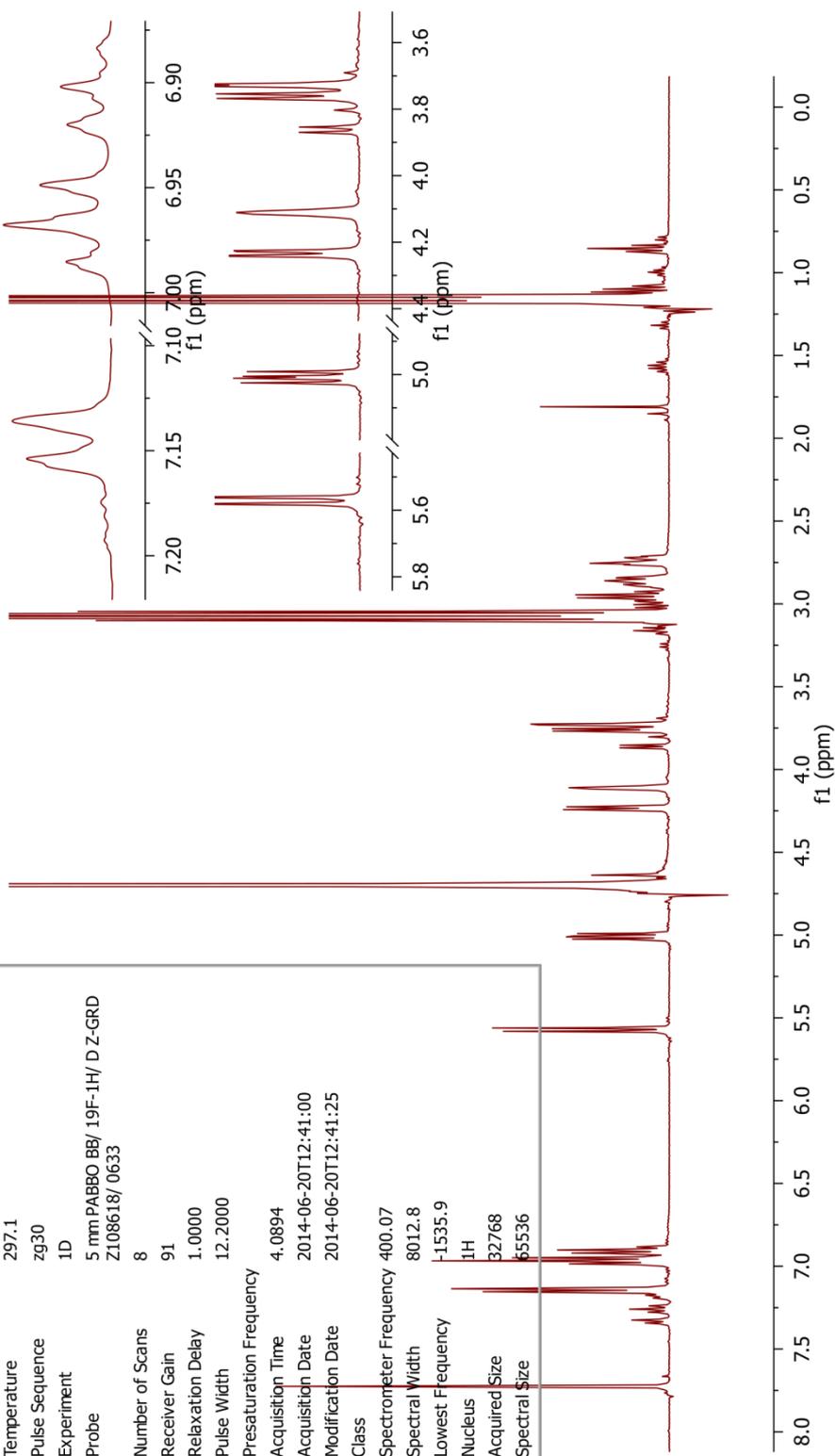
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5 Owner	nmr
6 Site	spect
7 Spectrometer	author
8 Author	D2O
9 Solvent	298.2
10 Temperature	zpg30
11 Pulse Sequence	1D
12 Experiment	5 mm PABBO BB/ 19F-1H/ D Z-GRD
13 Probe	Z108618/ 0633
14 Number of Scans	128
15 Receiver Gain	208
16 Relaxation Delay	2.0000
17 Pulse Width	13.0000
18 Presaturation Frequency	
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20 Acquisition Date	2014-06-20T12:38:00
21 Modification Date	2014-06-20T12:38:08
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26 Nucleus	31P
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28 Spectral Size	65536



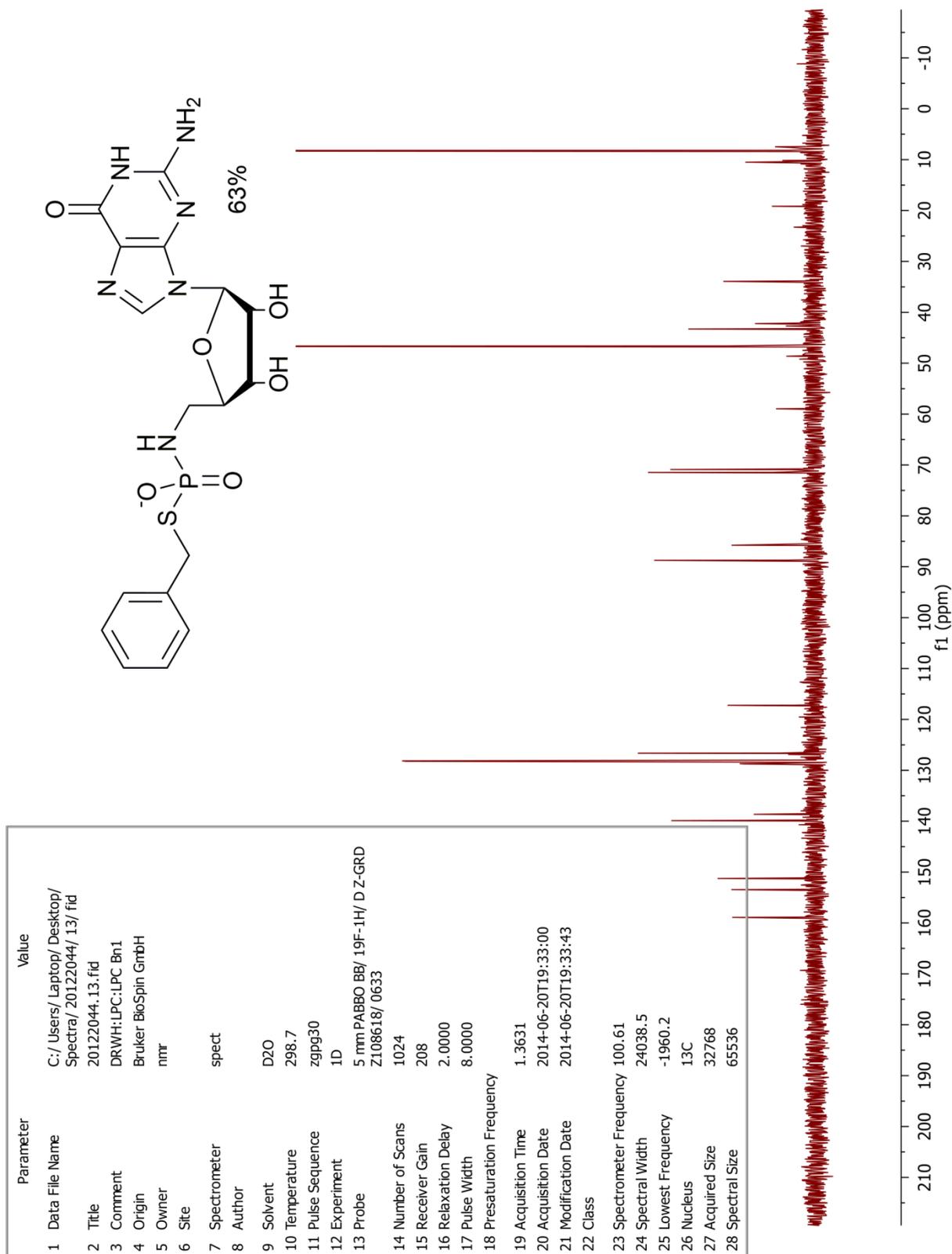
5'-Amino-5'-deoxyguanosine, *N*-,*S*-benzylthio - phosphoramidate, Triethylammonium salt ¹H NMR Spectrum



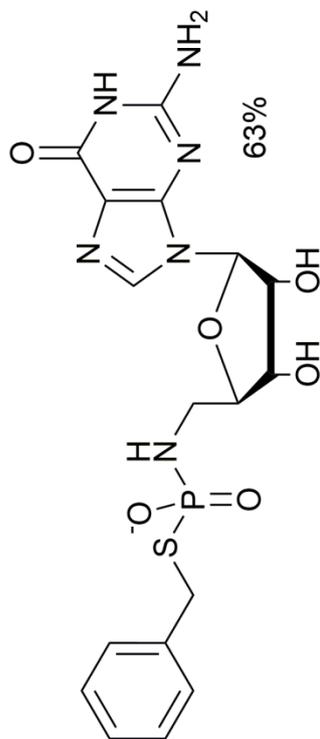
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5 Owner	nmr
6 Site	spect
7 Spectrometer	D2O
8 Author	297.1
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28 Spectral Size	65536



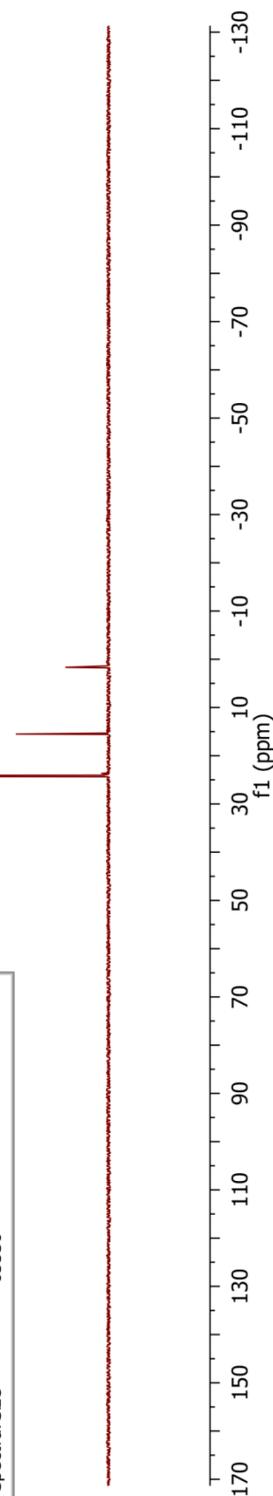
5'-Amino-5'-deoxyguanosine, *N,S*-benzylthio - phosphoramidate, Triethylammonium salt ¹³C NMR Spectrum



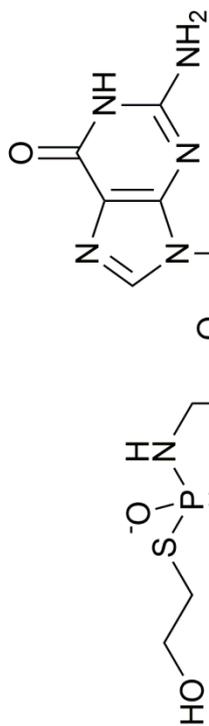
5'-Amino-5'-deoxyguanosine, *N*-,*S*-benzylthio - phosphoramidate, Triethylammonium salt ³¹P NMR Spectrum



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4 Origin	Bruker BioSpin GmbH
5 Owner	nmr
6 Site	
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8 Author	
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28 Spectral Size	65536

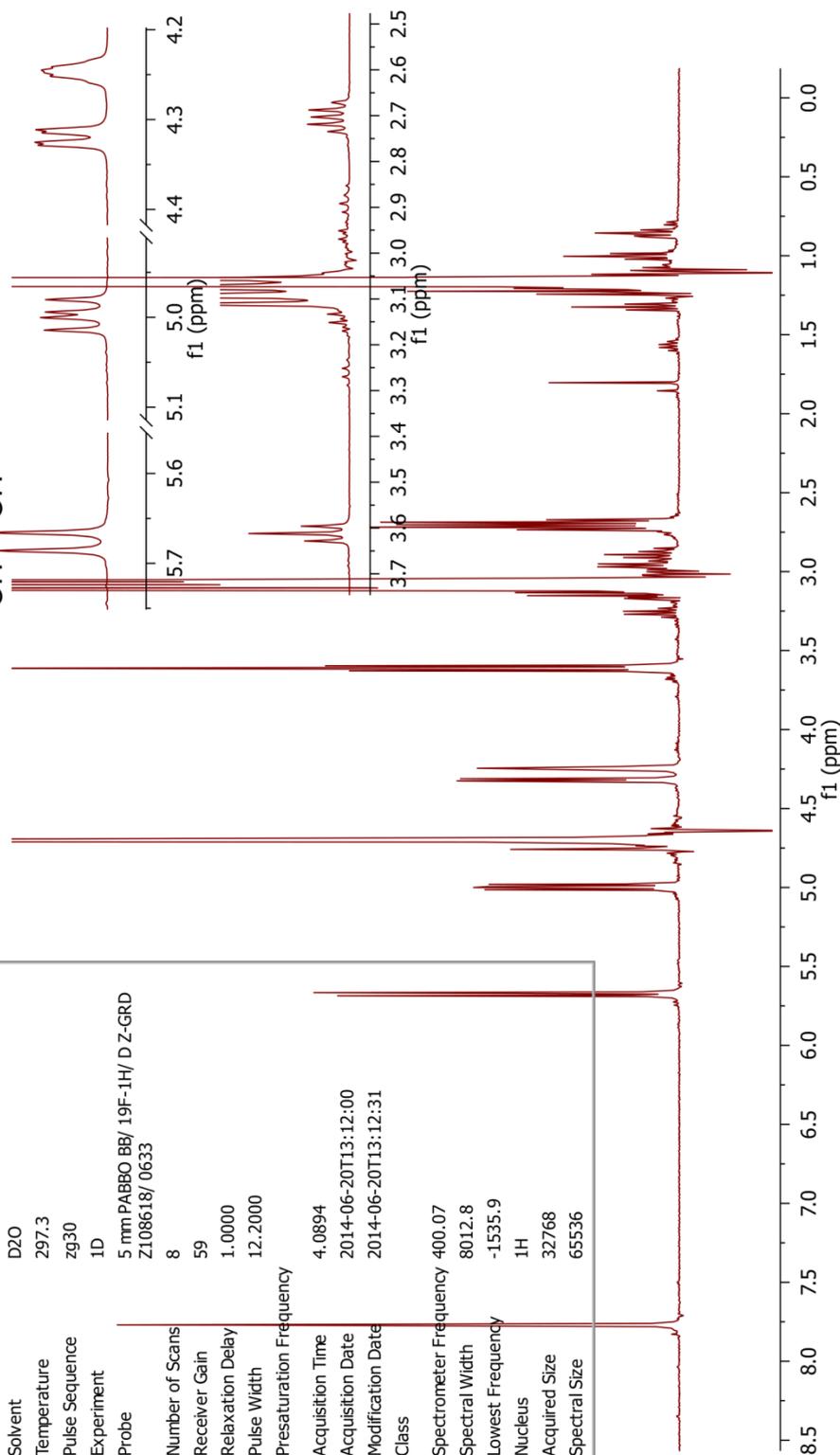


5'-Amino-5'-deoxyguanosine, *N,S*-ethan-2-olthio - phosphoramidate, Triethylammonium salt ¹H NMR Spectrum

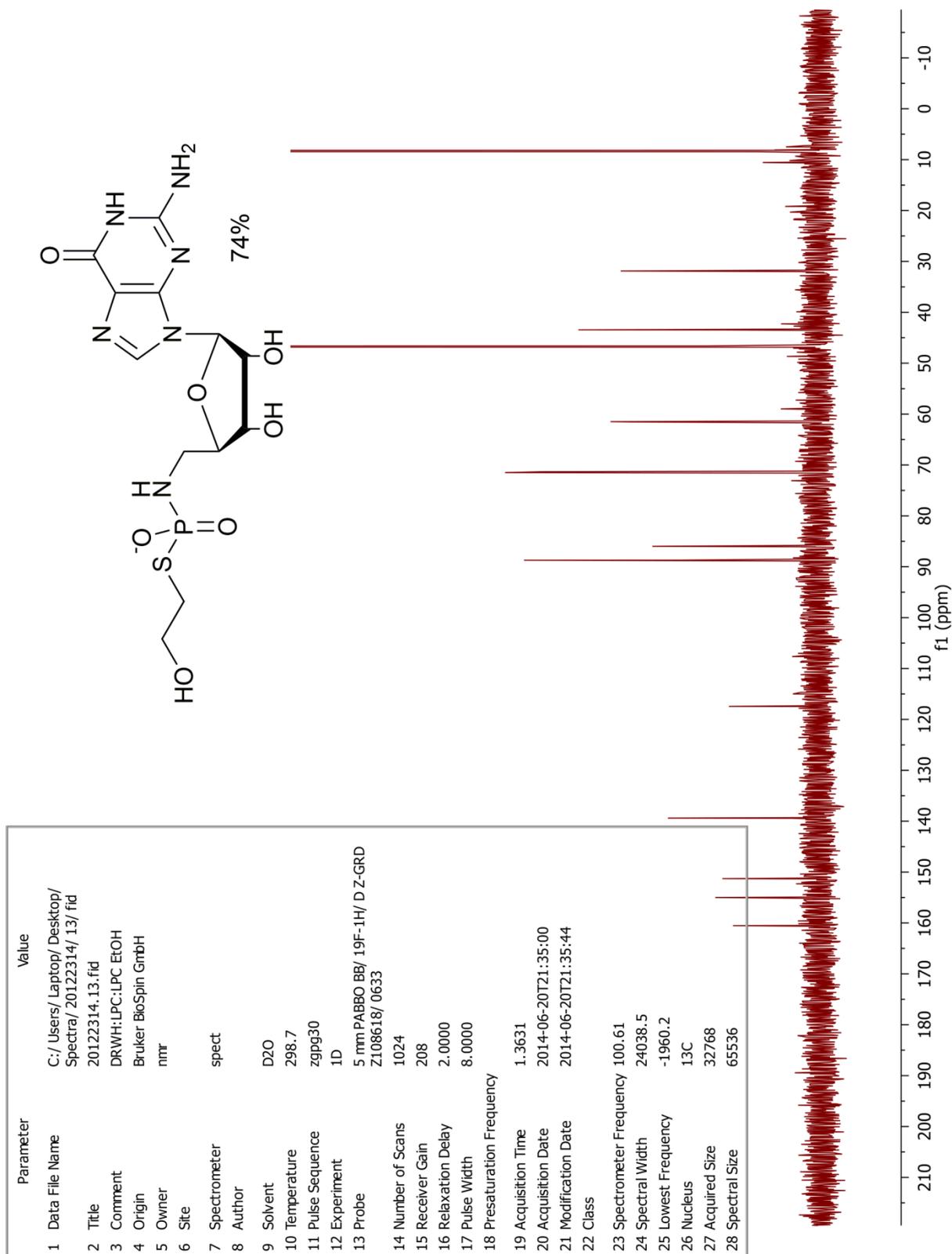


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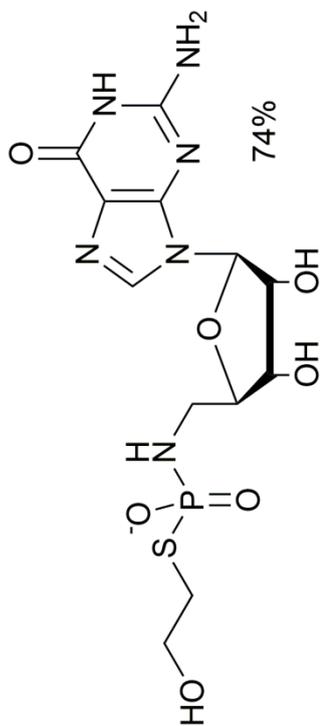
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4 Origin	Bruker BioSpin GmbH
5 Owner	nmr
6 Site	
7 Spectrometer	spect
8 Author	
9 Solvent	D2O
10 Temperature	297.3
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14 Number of Scans	8
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25 Lowest Frequency	-1535.9
26 Nucleus	1H
27 Acquired Size	32768
28 Spectral Size	65536



5'-Amino-5'-deoxyguanosine, *N,S*-ethan-2-olthio - phosphoramidate, Triethylammonium salt ¹³C NMR Spectrum



5'-Amino-5'-deoxyguanosine, *N,S*-ethan-2-olthio - phosphoramidate, Triethylammonium salt ³¹P NMR Spectrum



Parameter	Value
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5 Owner	nmr
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8 Author	
9 Solvent	D2O
10 Temperature	298.3
11 Pulse Sequence	zgpg30
12 Experiment	1D
13 Probe	5 mm PABBO BB/19F-1H/ D Z-GRD Z108618/0633
14 Number of Scans	128
15 Receiver Gain	208
16 Relaxation Delay	2.0000
17 Pulse Width	13.0000
18 Presaturation Frequency	
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24 Spectral Width	49019.6
25 Lowest Frequency	-21270.0
26 Nucleus	31P
27 Acquired Size	32768
28 Spectral Size	65536

