

#### Via Email

September 16, 2014

Department of Environment and Natural Resources Groundwater Protection Branch. 1636 Mail Service Center Raleigh, NC 27699-1636

Attention: Mr. Eric Smith, PG

Re: Injection Event Record

Former ATL No. 48 240 Sugar Lake Rd.

Pittsboro, NC

H&H Job No. DOT-515

Dear Eric:

On behalf of the North Carolina Department of Transportation, Hart and Hickman, PC (H&H) is submitting the attached Injection Event Record, injection well construction records, and a SRS-FR injection summary table associated with Injection By Rule Permit No. WI0500735. If you have any questions, please do not hesitate to contact us at (704) 586-0007.

Very truly yours,

Hart & Hickman, PC

Jeff Albano, PG Project Geologist Matt Bramblett, PE

Matt Frambutt

Principal

Attachments:

Cc: Mr. Ethan Caldwell, NCDOT (Via Email)

### **INJECTION EVENT RECORD**

North Carolina Department of Environment and Natural Resources – Division of Water Resources **Permit Number** WI0500735

1.	Permit Information	Were any wells abandoned during this injection event?  Yes  No
	NC DOT Permittee	If yes, please provide the following information:
	ATL No. 48 Facility Name	Number of Monitoring Wells
	240 S. A. I. B.I. Division M.G.	Number of Injection Wells
	240 Sugar Lake Rd, Pittsboro, NC Facility Address	Please include a copy of the GW-30 for each well abandoned.
2.	Injection Contractor Information	4. Injectant Information
	Hart and Hickman, PC	SRS®-FRL, large droplet emulsified oil product, and
	Injection Contractor / Company Name	BAC-9 bioenhancement culture (marketed by Terra Systems as TSI-DC)
		Injectant Type
	Street Address 2923 South Tryon St., Suite 100	Concentration 3.1 - 9.7 % SRS-FR, 100% TSI-DC
	Charlotte NC 28203	
	City State Zip Code	If the injectant is diluted please indicate the source dilution fluid. Municipal water (High Point, NC)
	( 704 ) 586-0007 Area code – Phone number	Total Volume Injected 1.85 gal (TSI-DC)
3.	Well Information	20 - 619 gallons (SRS-FR)  Volume Injected per well 0.37 gallons (TSI-DC)
	Number of wells used for injection5	5. Injection History
	Well names 48IW-1 through 48IW-5	Injection date(s) Aug 4-8, 2014 (SRS-FR) Aug 29, 2014 (TSI-DC)
	Were any new wells installed during this injection event?	Injection number (e.g. 3 of 5) 1 of 1 (SRS-FR), 1 of 1 (TSI-DC)
	X Yes No	Is this the last injection at this site?  X Yes
	If yes, please provide the following information:	
	Number of Monitoring Wells	I DO HEREBY CERTIFY THAT ALL THE INFORMATION ON THIS FORM IS CORRECT TO
	Number of Injection Wells 5	THE BEST OF MY KNOWLEDGE AND THAT THE INJECTION WAS PERFORMED WITHIN THE
	Type of Well Installed (Check applicable type):  Bored	STANDARDS LAID OUT IN THE PERMIT.
	Hand-Augured Other (specify)	SIGNATURE OF INJECTION CONTRACTOR DATE
	Please include a copy of the GW-1 form for each well installed.	Hart and Hickman, PC PRINT NAME OF PERSON PERFORMING THE INJECTION



North Carolina Department of Environment and Natural Resources- Division of Water Quality

#### WELL CONTRACTOR CERTIFICATION # \_\_\_\_4

1. WELL CONTRACTOR: Will Keyes					FT minated at/or belo		
Well Contractor (Individual) Name SAEDACCO Inc		-	a	variance in acc	ordance with 15A	NCAC 2C .01	18.
Well Contractor Company Name	1/0	-			METHOD (		
9088 Northfield Drive			f. DISINF	ECTION: Type		_ Amount	-
Street Address		2-1		R ZONES (dept			
Fort Mill	sc	29707	: Top	Bottom	Тор	Botton	m
City or Town	State	Zip Code	Top	Bottom	Top	Bottor	m
(803)548-2180			Тор	Bottom	Тор	Botton	m
Area code Phone number	-00		8 =	75 m 04-000-01	70 1304.70	Thickness/	
2. WELL INFORMATION:			7. CASIN	G: Depth	Diameter	Weight	Material
WELL CONSTRUCTION PERMIT#			: : Top	Bottom	Ft		
	entra.		Тор		Ft		
OTHER ASSOCIATED PERMIT#(if applicab	\$				Ft		
SITE WELL ID #(if applicable) 48-IW-	1		: TOP			<del></del>	
3. WELL USE (Check One Box) Monitoring	□ Municipal/P	ublic	8. GROU	T: Depth	Materia	al	Method
Industrial/Commercial ☐ Agricultural ☐			: Top0	Bottom 32	Ft. Portlar	nd	Pumped
		FOURBOOK IN SOM	Top		Ft.		9
Irrigation ☐ Other ☐ (list use)		<u>-</u>			Ft.		
DATE DRILLED 7/24/14			: TOP				
4. WELL LOCATION:			9. SCREE	N: Depth	Diameter	Slot Size	Material
240 Sugar Lake Rd. Pitt	sboro		: Top 35	Bottom	50 Ft. 2" in.	.10 in.	PVC
(Street Name, Numbers, Community, Subdivision		Zip Code)			Ftin.		
CITY: Pittsboro (	COUNTY Chai	-ham	÷		Ftin.		
	Managaran da	30	: TOP	Bollom			-
TOPOGRAPHIC / LAND SETTING: (che		576	10. SAND	GRAVEL PACE	<b>(</b> :		
□Slope □Valley ▼Flat □Ridge □C			•	Depth	Size	Material	
LATITUDE" [			Top34	Bottom5	0 Ft2a	Sand	
LONGITUDE" D	MS OR $7x.xx$	XXXXXXX DD	Top	Bottom	Ft		
Latitude/longitude source:  GPS  To (location of well must be shown on a USG this form if not using GPS)		dattached to	Top	Bottom	Ft		
5. FACILITY (Name of the business where t	he well is locate	ed.)	: 11. DRILL : Top	Bottom	Form	ation Description	on
S T Wooten			: <u> </u>	/ 10	Orang	ge clay	
Facility Name	Facility ID# (i	f applicable)	:10_	·	· -	clay	
240 Sugar Lake Rd. Pittsbo	oro, NC 273	312	:20	/	Weath	ered rock	
Street Address			:30	/ 50	Blue	bed rock	
Pittsboro	NC	27312		<u>/</u>	e e		
City or Town	State	Zip Code		<u>/</u>	8 8 <del>.</del>		
		- 10	· .	<i>!</i>	t e		
Contact Name				/			
Mailing Address	25.5			/ 20	: « <u> </u>		
A WHISTON A KINGON			:		0 0		
City or Town	State	Zip Code	12. REMA	RKS:			
)			:Wel	l installe	d at 50' usi	ng sonic	drilling
Area code Phone number			te	chnol			
. WELL DETAILS:					HIS WELL WAS CONS		
					CTION STANDARDS, A TO THE WELL OWNE		OF THIS
a. TOTAL DEPTH: 50			: /11/	7.			/30/2014
b. DOES WELL REPLACE EXISTING W	IELL? YES 🗆	NO 🔯	SIGNATU	RE OF CERTIF	ED WELL CONT		DATE
c. WATER LEVEL Below Top of Casing:		FT.	: Wil	l Keyes			
(Use "+" if Above Top of Cas	ing)				SON CONSTRUC	CTING THE WE	ELL



North Carolina Department of Environment and Natural Resources- Division of Water Quality

#### WELL CONTRACTOR CERTIFICATION # \_\_\_4

1. WELL CONTRACTOR: Will Keyes			CASING IS			
Well Contractor (Individual) Name SAEDACCO Inc	***	a v	rariance in accord	dance with 15A	NCAC 2C .01	18.
Well Contractor Company Name	-		jpm):			
9088 Northfield Drive		f. DISINFE	CTION: Type		_ Amount	_
Street Address Fort Mill SC	29707		ZONES (depth):		Potto	
	Zip Code		Bottom			
Oily of Town	Zip Code	\$	Bottom		Nina-mana	_ 50 6
()(803)548-2180		: Top	Bottom	Тор	Botto	m
Area code Phone number		:			Thickness/	
2. WELL INFORMATION:			: Depth		Weight	Material
WELL CONSTRUCTION PERMIT#		: Top	_ Bottom	_ Ft		
OTHER ASSOCIATED PERMIT#(if applicable)		: Top	_ Bottom	_ Ft	<del> </del>	
SITE WELL ID #(if applicable) 48-IW-2	1,5	Тор	Bottom	_Ft		
oriz treez to militappinousio)		:				
3. WELL USE (Check One Box) Monitoring   Municipal/Pub	olic 🗆	8. GROUT:		Materi		Method
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection	ction 🔀		_Bottom_ 32	Ft. Portlar	nd	Pumped
Irrigation ☐ Other ☐ (list use)		: Top	_ Bottom	_ Ft		
DATE DRILLED 7/24/14		Тор	_ Bottom	_ Ft		
4. WELL LOCATION:		9. SCREEN	l: Depth	Diameter	Slot Size	Material
240 Sugar Lake Rd. Pittsboro			Bottom 50			
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip	Code)		_ Bottom			
OUTV. Dittaliana COUNTY Charle		•				
CITY: Pittsboro COUNTY Chath	iam	: 10p	_ Bottom	_ Ftin.	In	-
TOPOGRAPHIC / LAND SETTING: (check appropriate box)		: 10. SAND/G	RAVEL PACK:			
□Slope □Valley ▼Flat □Ridge □Other				Size	Material	
LATITUDE " DMS OR 3x.xxxx		: Top34	_Bottom_ 50	_ Ft 2a	Sand	
LONGITUDE " DMS <b>OR</b> 7 <u>x.xxxxx</u>	XXXXX DD	: Top	Bottom	_ Ft		
Latitude/longitude source:   GPS   Topographic map  (location of well must be shown on a USGS topo map and at this form if not using GPS)	ttached to	Top	Bottom	_ Ft		
5. FACILITY (Name of the business where the well is located.)	)	Тор	Bottom	Form	ation Description	on
S T Wooten		: 0 /	10	Orang	ge clay	
Facility Name Facility ID# (if a	pplicable)	: 10 /	20	Silty	y clay	
240 Sugar Lake Rd. Pittsboro, NC 2731	500	: 20 /	30	Weatl	nered rock	
Street Address		:30/	50	Blue	bed rock	
	27312	:/		·		
City or Town State	Zip Code	:/		82		
		:/		E.		
Contact Name		i ——//	20	<u></u>		
Mailing Address	<u></u>			e		
City or Town State 2	Zip Code	:		()		
3000		: 12. REMAR		at E01	ing genie	drillina
Dhana mumbar		S	installed hnol	at ou' us:	ing sonic (	rrrring
Area code Phone number		:		WELL WAS COME	TRUCTED IN ACCO	ADDANCE WITH
. WELL DETAILS:		: 15A NCAC 2C,	CERTIFY THAT THIS WELL CONSTRUCTION	ON STANDARDS,	AND THAT A COPY	
a. TOTAL DEPTH: 50		RECORD HAS	BEEN PROVIDED TO	THE WELL OWNE		
b. DOES WELL REPLACE EXISTING WELL? YES	NO 🖫	SIGNATUR	OF CERTIFIED	WELL CONT		/30/2014 DATE
c. WATER LEVEL Below Top of Casing:37	FT.		Vorres			
(Use "+" if Above Top of Casing)			Keyes	N CONCTOU	CTING THE WE	-1.1



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#### WELL CONTRACTOR CERTIFICATION # \_\_\_\_4

I.WELL CONTRACTOR: Will Keyes				F CASING IS			
Well Contractor (Individual) Name SAEDACCO Inc		*	а	variance in accor	dance with 15A	NCAC 2C .01	18.
Well Contractor Company Name	-			(gpm):			
9088 Northfield Drive			f. DISINF	ECTION: Type		_ Amount	
Street Address Fort Mill	sc	29707		R ZONES (depth)		D . # .	
City or Town	State	Zip Code		Bottom		4	
City of Town	State	Zip Code	Тор	Bottom			
(803)548-2180			: Top	Bottom	Top	Botto	m
Area code Phone number			•			Thickness/	
2. WELL INFORMATION:			7. CASING	G: Depth	Diameter	Weight	Material
WELL CONSTRUCTION PERMIT#			: Top	Bottom	_ Ft		
OTHER ASSOCIATED PERMIT#(if applicable)			: Top	Bottom	_ Ft		
SITE WELL ID #(if applicable) 48-IW-3			: Top	Bottom	_ Ft		
The Well ID #(II applicable)			:		PAGE CONTRACT		22002000
3. WELL USE (Check One Box) Monitoring   N	/lunicipal/F	Public 🗆	8. GROUT		Materia		Method
Industrial/Commercial ☐ Agricultural ☐ Rec	overy 🗆 Ir	njection 🕱	: Top0	Bottom29			Pumped
Irrigation ☐ Other ☐ (list use)			: Top	Bottom	_ Ft		
DATE DRILLED 7/24/14			: Тор	Bottom	_ Ft		
4. WELL LOCATION:			. SCREE	N: Depth	Diameter	Slot Size	Material
240 Sugar Lake Rd. Pittsbo	~~						
Street Name, Numbers, Community, Subdivision, Lot N		Zip Code)		Bottom 47			
				Bottom			
CITY: Pittsboro COUN	. 44354 - 51 <sub>111111</sub>	7.6	: Top	Bottom	_ Ftin.	in	
TOPOGRAPHIC / LAND SETTING: (check app			: 10 SAND/	GRAVEL PACK:			
□Slope □Valley ▼Flat □Ridge □Other			: 10. SANDI		Size	Material	
LATITUDE" DMS C	3x.xx	XXXXXXX DD	:Top_ 31	Bottom <b>47</b>	_ Ft 2a	Sand	
LONGITUDE " DMS C	OR 7x.xx	XXXXXXX DD		Bottom			
Latitude/longitude source:  GPS  Topogra (location of well must be shown on a USGS top this form if not using GPS) FACILITY (Name of the business where the we	oo map an	dattached to	Top	Bottom	Ft		
. PACILITY (Name of the business where the we	eli is locate	su.)	Top	Bottom	Form	ation Description	on
S T Wooten	-		: <u> </u>	·——		ge clay	
Facility Name Fa	cility ID# (	if applicable)	:	·——	· -	z clay	
240 Sugar Lake Rd. Pittsboro,	NC 273	312	:	/	10-	nered rock	
Street Address			: <u>30</u>	/47	Blue	bed rock	
Pittsboro City or Town	NC State	Zip Code	·	<del>/</del>	0		
Oity of Town	State	Zip Code	· —	<u>'</u>	8.		
Contact Name			: -	<u>'</u>	8		
Contact Harrie			:	/ 20	<u> </u>		
Mailing Address	12.2	<u></u>		<u></u>	8 <u>-</u>		
City or Town	State	Zip Code		<i>'</i>	ÿ-		
200	2.3.0		: 12. REMAI		at 471	ina acric	drillina
Dhono number			S	l installed	at 1/ us	ing sourc	ar rrrring .
rea code Phone number			:	CERTIFY THAT THIS	WELL WAS CONS	TRUCTED IN ACCO	ORDANCE WITH
. WELL DETAILS:			: 15A NCAC 20	, WELL CONSTRUCT	ION STANDARDS, A	AND THAT A COPY	
a. TOTAL DEPTH: 47			RECORD HAS	S BEEN PROVIDED TO	THE WELL OWNE		
b. DOES WELL REPLACE EXISTING WELL?	? YES □	NO 🔀	SIGNATUR	SE CEPTIFIE	D WELL CONT		/30/2014 DATE
	4018	<del></del>	SIGNATUR	RE OF CERTIFIE	D WELL CONT	RACIOR	DATE
c. WATER LEVEL Below Top of Casing: (Use "+" if Above Top of Casing)	37	FT.		l Keyes			
(Use + ii Above rop or casing)			<ul> <li>PRINTED</li> </ul>	NAME OF PERSO	ON CONSTRUC	CTING THE WI	ELL



North Carolina Department of Environment and Natural Resources- Division of Water Quality

#### WELL CONTRACTOR CERTIFICATION # \_\_\_\_4

I. WELL CONTRACTOR: Will Keyes	d. TOP OF CASING IS FT. Above Land Surface*  *Top of casing terminated at/or below land surface may require
Well Contractor (Individual) Name SAEDACCO Inc	a variance in accordance with 15A NCAC 2C .0118.
Well Contractor Company Name	e. YIELD (gpm): METHOD OF TEST
9088 Northfield Drive	f. DISINFECTION: Type Amount
Street Address	g. WATER ZONES (depth):
Fort Mill SC 29707	Bottom
City or Town State Zip Code	Bottom Top Bottom
)(803)548-2180	: Top Bottom Top Bottom
Area code Phone number	: Thickness/
2. WELL INFORMATION:	7. CASING: Depth Diameter Weight Material
WELL CONSTRUCTION PERMIT#	Ft Ft
OTHER ASSOCIATED PERMIT#(if applicable)	Bottom Ft
SITE WELL ID #(if applicable) 48-IW-4	
THE WELL TO #(II applicable)	
B. WELL USE (Check One Box) Monitoring ☐ Municipal/Public ☐	8. GROUT: Depth Material Method
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection 🕱	Top 0 Bottom 32 Ft Portland Pumped
Irrigation ☐ Other ☐ (list use)	Bottom Ft
DATE DRILLED 7/24/14	: Top Bottom Ft
WELL LOCATION:	
	9. SCREEN: Depth Diameter Slot Size Material
240 Sugar Lake Rd. Pittsboro Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)	Top 35 Bottom 50 Ft. 2" in
Street Name, Numbers, Community, Subdivision, Lot No., Parcei, Zip Code)	Top Bottom Ftin in
CITY: Pittsboro COUNTY_Chatham	Ftin in
TOPOGRAPHIC / LAND SETTING: (check appropriate box)	
□Slope □Valley ▼Flat □Ridge □Other	: 10. SAND/GRAVEL PACK: Depth Size Material
LATITUDE " DMS OR 3x.XXXXXXXXX DD	Depth Size Material Top_ 34 _Bottom_ 50 Ft_ 2a Sand
LONGITUDE "DMS OR 7x.xxxxxxxxx DE	
Latitude/longitude source: GPS Topographic map	TopBottomFt
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)	
. FACILITY (Name of the business where the well is located.)	: 11. DRILLING LOG : Top Bottom Formation Description
. I Adicit I (Name of the business where the weir is located.)	Top Bottom Formation Description
S T Wooten	0 / 10 Orange clay
Facility Name Facility ID# (if applicable)	
240 Sugar Lake Rd. Pittsboro, NC 27312	20 / 30 Weathered rock
Street Address	30 / 50 Blue bed rock
Pittsboro         NC         27312           City or Town         State         Zip Code	; — <del>', — — — — — — — — — — — — — — — — — — —</del>
City or Town State Zip Code	\$
Contact Namo	· • · · · · · · · · · · · · · · · · · ·
Contact Name	
Mailing Address	
City or Town State Zip Code	
State ZIP Code	12. REMARKS:
	: Well installed at 50' using sonic drilling technol
rea code Phone number	-
. WELL DETAILS:	: I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH • 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS
a. TOTAL DEPTH: 50	RECORD HAS BEEN PROVIDED TO THE WELL OWNER.
b. DOES WELL REPLACE EXISTING WELL? YES □ NO 🗷	SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
c. WATER LEVEL Below Top of Casing:FT.	: Will Keyes
(Use "+" if Above Top of Casing)	PRINTED NAME OF PERSON CONSTRUCTING THE WELL



North Carolina Department of Environment and Natural Resources- Division of Water Quality

### WELL CONTRACTOR CERTIFICATION # 4220

Agentine.	
1. WELL CONTRACTOR:	d. TOP OF CASING IS FT. Above Land Surface*
Will Keyes	*Top of casing terminated at/or below land surface may requir a variance in accordance with 15A NCAC 2C .0118.
Well Contractor (Individual) Name SAEDACCO Inc	= : e. YIELD (gpm): METHOD OF TEST
Well Contractor Company Name	f. DISINFECTION: Type Amount
9088 Northfield Drive	: DISINFECTION: Type Althount
Street Address	g. WATER ZONES (depth):
Fort Mill SC 29707	: Top Bottom Top Bottom
City or Town State Zip Code	Top Bottom Top Bottom
()(803)548-2180 Area code Phone number	Top Bottom Top Bottom Thickness/
2. WELL INFORMATION:	7. CASING: Depth Diameter Weight Materia
WELL CONSTRUCTION PERMIT#	. Top Bottom Ft
OTHER ASSOCIATED PERMIT#(if applicable)	
SITE WELL ID #(if applicable) 48-IW-5	Ft Ft
	: 8. GROUT: Depth Material Method
3. WELL USE (Check One Box) Monitoring ☐ Municipal/Public ☐	
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection 🕱	
Irrigation ☐ Other ☐ (list use)	Top Bottom Ft
DATE DRILLED 7/24/14	Top Bottom Ft
4. WELL LOCATION:	9. SCREEN: Depth Diameter Slot Size Material
240 Sugar Lake Rd. Pittsboro	Top 35 _Bottom 50 _Ft 2" _in10 _inPVC
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)	Top Bottom Ftin in
CITY: Pittsboro COUNTY Chatham	Bottom Ftin in
TOPOGRAPHIC / LAND SETTING: (check appropriate box)	
□Slope □Valley ▼Flat □Ridge □Other	: 10. SAND/GRAVEL PACK:
LATITUDE " DMS OR 3x.xxxxxxxxx DI	Depth Size Material
	10pBottom1t
LONGITUDE DMS <b>OR</b> 7x.xxxxxxxxx D	DD : TopBottom Ft
Latitude/longitude source:   GPS   Topographic map  (location of well must be shown on a USGS topo map andattached to this form if not using GPS)	
5. FACILITY (Name of the business where the well is located.)	: 11. DRILLING LOG : Top Bottom Formation Description
,	State 4 Contract Cont
S T Wooten	0 / 10 Orange clay 10 / 20 Silty clay
Facility Name Facility ID# (if applicable)	20 / 30 Silty Clay Weathered rock
240 Sugar Lake Rd. Pittsboro, NC 27312	30 / 50 Blue bed rock
Street Address Pittsboro NC 27312	: 30 / 50 Bide bed fock
Pittsboro         NC         27312           City or Town         State         Zip Code	- :
2.19 Odde	;;
Contact Name	
Mailing Address	- :
	/
City or Town State Zip Code	12. REMARKS:
)	Well installed at 50' using sonic drilling
Area code Phone number	technol
S. WELL DETAILS:	I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WIT  15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS
a. TOTAL DEPTH: 50	RECORD HAS BEEN PROVIDED TO THE WELL OWNER.
b. DOES WELL REPLACE EXISTING WELL? YES □ NO 🖫	SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
c. WATER LEVEL Below Top of Casing: 37FT.	Will Keyes
(Use "+" if Above Top of Casing)	DDINTED NAME OF DEDOON CONCEDUCTING THE WELL

Table 1.

SRS-FR Injection Summary
 ATL No. 48

Pittsboro, North Carolina
 H&H Job No. DOT-515

Well ID	SRS FR (gal)	Sodium Bicarbonate (lbs)	Dilution Water (gal)	Chase Water (gal)
48IW-1	65.5	15	553.5	315
48IW-2	1	-	19	10
48IW-3	65.5	15	406.5	980
48IW-4	44	10	271	485
48IW-5	44	10	271	390
Total	220	50	1,521	2,180

#### Notes:

gal = gallons, lbs = pounds

SRS-FR injection conducted on August 4 - 8, 2014.