KEYSTONE PHASE IV, US PIPELINE PROJECT - STEELE CITY S PIPELINE ROUTE VARIATION FORM	EGMENT
VARIATION TYPE: Refinement: Reroute:	X
Centerline: X Valve Site:	Pump Station:
LOCATION: Sketch: Attached Pictures:	See attached.
State: SD, NE County: Multiple Quad Map:	
	See attached map sheet
Section: Multiple Centerline: 11/18/2010 MP:	XXX.X to XXX.X
REASON FOR ROUTE VARIATION (Please include reason for route variation):	
This report consists of 2 proposed route variations to realign Horizontal Directional Drills. The reason for "Supplemental Info" tab.	r the route variation is listed in the
The route variations have been proposed based on a combination of Flyover video of Centerline, LIDAR	data, Pictometry and other aerials.
DETAIL ROUTE VARIATION (Please describe route variation in detail):	
Listed in "Supplemental Info" Tab.	
No new landowners have been affected by the proposed route variations.	
ADDITIONAL IMPACTS (Please include any additional impacts which may affect cost; crossings, induc	tion bends, etc.):
Listed in "Cost Analysis" Tab.	
9	10
Originator: Engineering	Received by:
Date: 6/28/2011	Date: 6/28/2011
11	Fax to: ?
Assigned Tracking Number: 0212-XX-P2-XXX.X-XXX.X-S	Filed by:
	Date:
	Fax to: ?

## Keystone Phase IV, US - Supplemental Information for Route Variation Report 0212 Prepared: 2011-06-29

RV ID	MP S	Start MP End	d State	County	Section	Township	o Range	Original Length (ft)	Reroute Length (ft)	Change in Length (ft	Max. Perp Deviation (ft)		Brief Variation Description	Additional Impacts/Comments	Number of New Landowners impacted by reroute	Landowners on	Number of tracts Civil Sur purchased on original route.	vey Civil Survey e? Needed (ft)	<i>,</i> , , , , , , , , , , , , , , , , , ,	<b>I</b>	o- Biological Surved Complete for Existing Corrido	Complete for	Biological Survey Complete for Proposed Corridor?	Cultural Survey Complete for Proposed Corridor?	Estimated Length Requiring new Environmental Surveys (ft)	Originator
0212-0	1 292.	2.99 294.03	3 SD	Harding	22,27,26	32N	37E	5,460	5,469	9	141	To have better Entry pt. at Little Missouri River HDD.	Route variation starts near MP 293 and deviates ~2° south from C/L for ~3,952 ft. then it turns east for ~1,517 lt to rejoin the current C/L near MP 294.0.	- Current location is not constructable due to location being in drainage/ditch.	0	2	NO	5,469	NO	NO NO	Yes	Yes	No	No	5,469	Engineering
0212-0	2 617.	7.45 618.33	B NE	Rock	16,15	2N	23E	4,654	4,578	-76	397	To realign the Nichrara river HDD	Route variation starts at MP 617.45 and continues south thus deviating from current C/L ~8.5°. It continues straight south until it rejoins the C/L near MP 618.3.	-Exit side was on a slope, so move back to facilitate pullback.	0	2	NO	4,578	NO	NO NO	Yes	Yes	No	No	4,578	Engineering

# Keystone Phase IV, US - Cost Analysis for Route Variation Report 0212 Prepared: 2011-06-29

RV ID	Additional length (ft)	Cost \$360/ft	Additional length of wetland construction (ft)	-	Additional length of side hill construction (ft)	Cost \$19/ft	Additional bore length (ft)	Cost \$540/ft	Additional Waterbody crossings	Cost (\$77,250/EA btw 10' - 19') (\$32,500/EA < 10')	Cost of Environmental survey (\$5,300/mile)	Cost of Civil survey (\$5,000/mile)	Approximate cost for land purchased on current centerline	Miscellaneous cost for additional impacts	Total Cost
0212-01	9	\$ 3,269.50	0	\$ -	0	\$ -	0	\$ -	0	\$ -	\$ 5,489.91	\$ 5,179.16	\$ -	\$ (50,000.00)	\$ (36,061.44)
0212-02	-76	\$ (27,262.62)	0	\$ -	0	\$ -	0	\$ -	0	\$ -	\$ 4,595.45	\$ 4,335.33	\$ -		\$ (18,331.84)

Overall Estimated Costs of Routes Variations= \$ (54,393.28)

### **Keystone Phase IV, US - Approval form for Route Variation Report 0212**

Prepared: 2011-06-29

RV ID		0212-01	0212-02
LAND (UEO)	Approval (Y/N)	Υ	Y
LAND (UFS) Doug Riechley	Comments	- Approved during 6/21/2011 meeting	- Approved during 6/21/2011 meeting
ENGINEEDING (Transcareda)	Approval (Y/N)	Y	Y
ENGINEERING (TransCanada) Meera Kothari / David Guien	Comments	- Approved during 6/21/2011 meeting	- Approved during 6/21/2011 meeting
,	Approval (Y/N)	Υ	Υ
ENGINEERING (exp) Butch Wallace	Comments	- Approved during 6/21/2011 meeting	- Approved during 6/21/2011 meeting
CONCEDUCTION (T	Approval (Y/N)	Y	Y
CONSTRUCTION (TransCanada) Bobby Curbow	Comments	- Approved during 6/21/2011 meeting	- Approved during 6/21/2011 meeting
	Approval (Y/N)	Y	Y
ENVIRONMENTAL (exp) Jonathan Minton	Comments	- Cultural site on the south side - No issues Requires additional Env. Survey	<ul> <li>No Issues as long as line is not shifted east towards cultural site on the south side of the HDD.</li> <li>Requires additional Env. Survey</li> </ul>
	Approval (Y/N)	N/A	N/A
SAFETY (exp.) Jason Mllenbruch	Comments	- Approved during 6/21/2011 meeting	- Approved during 6/21/2011 meeting
	Approval (Y/N)	N/A	N/A
FACILITIES (TransCanada) Sandra Gigovic	Comments	- Approved during 6/21/2011 meeting	- Approved during 6/21/2011 meeting
PROJECT MANAGEMENT	Approval (Y/N)	Y	Y
(TransCanada) Alan Lietz	Comments	- Approved during 6/21/2011 meeting	- Approved during 6/21/2011 meeting
PROJECT MANAGEMENT	Approval (Y/N)		
(TransCanada) Steve Marr	Comments		

#### KEYSTONE PIPELINE PROJECT - U.S. PHASE IV (STEELE CITY SEGMENT)

If Rejected Why?  Exo - Environmental Jonathan Minton Comments:  If Rejected Why?  AECOM - Blak Assesment Heldi Tiliquist Comments: N/A.  If Rejected Why?  Variation: Approved N/A Rejected Date:  If Rejected Why?  Exo - Safety Jeson Millenbruch Comments: N/A.  If Rejected Why?  Facilities: Sandra Gigovic Variation: Approved N/A Rejected Why?  Facilities: Sandra Gigovic Variation: Approved N/A Rejected Why?  Facilities: Sandra Gigovic Variation: Approved N/A Rejected Why?  Facilities: Variation: Approved N/A Rejected Date:  If Rejected Why?  Facilities: Sandra Gigovic Variation: Approved N/A Rejected Date:  If Rejected Why?  Facilities: Sandra Gigovic Variation: Approved N/A Rejected Why?		KEYSTONE PIPELINE PROJECT - U. ROUTE VARIATION	AUTHORIZATION FORM	
Nontrain Books (NY-211)   Instruction   In				Control of the Contro
Universal Field - Land	Description,	Northern Border (RV-0211) Little Missouri & Niobrara HDD's realign (RV-0212)	Originated By:	Multiple
TransCasade-Engloseding  Meera Kotharl  Comments: Sp David Guten  Meera Kotharl  Comments: Sp David Guten  Meera Kotharl  Comments: Sp David Guten  Meera Kotharl  If Rejected  Why?   TransCasade-Engloseding  Butch Wallace  Comments: Sp David Guten  Date: 620 & 6/21/2011  If Rejected  Why?  TransCasade-Construction  Bobby Curbow  Variation: Approved X Rejected  Why?  TransCasade-Construction  Bobby Curbow  Variation: Approved X Rejected  Why?  If Rejected  Why?  AECOM-Risk Assessment  Held Tiliquist  Omments: NA.  If Rejected  Why?  TransCasade-Senior PM  Alan Lietz  Variation: Approved NA Rejected  Why?  TransCasade-Renior PM  Alan Lietz  Variation: Approved NA Rejected  Why?  TransCasade-Renior PM  Alan Lietz  Variation: Approved NA Rejected  Why?  TransCasade-Renior PM  Alan Lietz  Variation: Approved NA Rejected  Why?  TransCasade-Renior PM  Alan Lietz  Variation: Approved NA Rejected  Why?  TransCasade-Renior PM  Alan Lietz  Variation: Approved NA Rejected  Why?  TransCasade-Renior PM  Alan Lietz  Variation: Approved NA Rejected  Why?  TransCasade-Renior PM  Alan Lietz  Variation: Approved NA Rejected  Why?  TransCasade-Managez  Steve Marr  Variation: Approved NA Rejected  TransCasade-Managez  TransCasade-Managez  TransCasade-Managez  Steve Marr  Variation: Approved  TransCasade-Managez  TransCasad				
TransCanada-Engloserina Meera Kothari Variation: Approved X Rejected Date: 6/20 & 0/21/2011    If Rejected Date: 6/20 & 0/21/2011     I			Variation: Approved	A COLUMN TO THE REAL PROPERTY AND ADDRESS OF THE PARTY AND ADDRESS OF T
Comments: By David Guien  Butch Wallace  Comments:  If Rejected Why?	Commonts.		If Rejected Why?	Date: 6/20 & 6/21/2011
If Rejected   Winy?	TransCanad	fa-Engineering Meera Kothari	Variation: Approved	X Rejected
TransCanada - Senior PM Alan Lletz  Comments:  If Rejected Why?  Variation: Approved X Rejected Why?  Variation: Approved X Rejected Why?  Variation: Approved X Rejected Why?  Variation: Approved N/A Rejected Why?  Variation: Approved N/A Rejected Why?  Variation: Approved N/A Rejected Why?  TransCanada - Senior PM Alan Lletz Comments:  If Rejected Why?  Variation: Approved N/A Rejected Why?  If Rejected Why?  Variation: Approved N/A Rejected Why?	Comments:	By David Guien		Date: 6/20 & 6/21/2011
TransCanada - Senior PM Alan Lletz  Comments:  If Rejected Why?  Variation: Approved X Rejected Why?  Variation: Approved X Rejected Why?  Variation: Approved X Rejected Why?  Variation: Approved N/A Rejected Why?  Variation: Approved N/A Rejected Why?  Variation: Approved N/A Rejected Why?  TransCanada - Senior PM Alan Lletz Comments:  If Rejected Why?  Variation: Approved N/A Rejected Why?  TransCanada - Senior PM Alan Lletz Comments:  If Rejected Why?  Variation: Approved N/A Rejected Why?  Variation: Approved N/A Rejected Why?  TransCanada - Senior PM Alan Lletz Comments:  If Rejected Why?  Variation: Approved X Rejected Why?  TransCanada - Manager Steve Marr  Variation: Approved X Rejected Why?  TransCanada - Manager Steve Marr  Variation: Approved X Rejected Why?  Preserved N/A Rejected Why?  TransCanada - Manager Steve Marr  Variation: Approved X Rejected Why?  Preserved N/A Rejected Why?  TransCanada - Manager Steve Marr  Variation: Approved X Rejected Why?  Rejected Why?  Preserved N/A Rejected Why?	Exp - Engine	eering Butch Wallace	Variation: Approved	X Relected
TransCanada - Construction  Bobby Curbow  Variation: Approved X Rejected Date: 6/20 & 6/21/2011  If Rejected Why?  AECOM - Risk Assessment  Facilities:  Date: 6/20 & 6/21/2011  Facilities:  Sandra Gigovic  Variation: Approved N/A Rejected Why?  Variation: Approved N/A Rejected Why?  Facilities:  Sandra Gigovic  Variation: Approved N/A Rejected Why?  Facilities:  Facilities:  Sandra Gigovic  Variation: Approved N/A Rejected Why?  Facilities:  Facilities:  Facilities:  Sandra Gigovic  Variation: Approved N/A Rejected Why?  Facilities:  Facilities:				
Comments:   Date: 6/20 & 6/21/2011				
If Rejected   Why?		a - Construction Bobby Curbow	Variation: Approved	
AECOM - Risk Assesment	Comments:		if Rejected Why?	Date: 6/20 & 6/21/2011
AECOM - Risk Assessment Heldi Tiliquist Variation: Approved N/A Rejected Date:  If Rejected Why?  Exp - Safety Jason Millenbruch Variation: Approved N/A Rejected Why?  Facilities: Sandra Gigovic Variation: Approved N/A Rejected Why?  Facilities: Sandra Gigovic Variation: Approved N/A Rejected Why?  Facilities: Variation: Approved N/A Rejected Date:  If Rejected Why?  FransCanada - Sanior PM Alan Lietz Variation: Approved X Rejected Why?  FransCanada - Sanior PM Alan Lietz Variation: Approved X Rejected Why?  FransCanada - Manager Steve Marr Variation: Approved Rejected T/A	THE RESIDENCE OF THE	amentai Jonathan Minton	Variation: Approved	
Comments: N/A.	Comments.	to an insulated second to the		Date: 6/20 & 6/21/2011
Exp - Safety  Jason Millenbruch  Variation: Approved N/A Rejected  Why?  Facilities:  Sandra Gigovic  Wariation: Approved N/A Rejected  Why?  Facilities:  Comments: N/A. Does not affect Facilities.  If Rejected Why?  Variation: Approved N/A Rejected  Why?  If Rejected Why?  Variation: Approved X Rejected Why?  If Rejected Why?  Variation: Approved X Rejected  Why?  Variation: Approved X Rejected  Why?  Variation: Approved X Rejected  If Rejected  Why?  Variation: Approved X Rejected  Why?			Variation: Approved	
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If Rejected Why?  Sandra Gigovic Variation: Approved N/A Rejected Date:  If Rejected Why?	Exp - Safety		Variation: Approved	N/A Rejected
Facilities:  Sandra Gigovic  Variation: Approved N/A Rejected  Date:  If Rejected Why?  FranaCanada - Senior PM  Alan Lletz  Variation: Approved X Rejected Why?  FranaCanada - Senior PM  Alan Lletz  Onments:  If Rejected Why?  Variation: Approved X Rejected Why?  FranaCanada - Manager  Steve Marr  Comments:  If Rejected  If Rejected  If Rejected  If Rejected  If Rejected	Comments:	N/A.	if Rejected Why?	Date:
IranaCanada - Senior PM  Alan Lietz  Variation: Approved X Rejected  Comments:  Date: 6/20 & 6/21/2011  If Rejected Why?  Variation: Approved Why?  Variation: Approved Proved Pr	Fecilities:	Sandra Gigovic		N/A Rejected
Comments:    If Rejected   Why?	Comments:	N/A. Does not affect Facilities.	if Rejected Why?	Date:
If Rejected Why?    If Rejected Why?		- Senior PM Alan Lletz	Variation: Approved	
Comments: Date: If Rejected	Comments:		if Rejected Why?	Date: 6/20 & 6/21/2011
If Rejected	TransCanada	1 - Manager Steve Marr	Variation: Approved	
			If Rejected Why?	

RV-0202-0208, RV-0210-0212, RV-0218

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		KETOTOK	E XL PIPELINE PRO PIPELINE ROUTE					
VARIATION TYPE:		Refinement:	and the same of the last		Reroute:	Х		
	Centerline:	X		Valve Site:			Pump Star	tion:
LOCATION:		Sketch:	Attached		Pictures: S	ee attached		
State:	Multiple	County:	Multiple		Quad Map: N	/A		479
Township: Section:	Multiple	Range:	Multiple	1/18/2010	Aerial Map: S MP:	ee attached XXX.X	THE RESERVE TO SERVE THE PARTY OF THE PARTY	VVVV
Section:	Multiple		Centerline: 1	1/16/2010	IVIF:	****	to	XXX.X
REASON FOR ROUT The Reason for each		A LOUIS DE LA CONTRACTION DEL CONTRACTION DE LA						
These reroutes are prince and provided in the	NATION (Please Variation Files	e describe route	variation in detail):		ne through BLM	i lands, Mont	ana, South	Dakota, and
RVs included: BLM Land (RV-0202- Northern Border (RV Little Missouri & Nio Pawnee Burlal Grou	/-0211) brara HDD's re		2)					
BLM Land (RV-0202- Northern Border (RV Little Missouri & Nio	/-0211) brara HDD's re nd (RV-0218)	ealign (RV-0212		y affect cost; cros	sings, induction	n bends, etc.)	):	
BLM Land (RV-0202- Northern Border (RV Little Missouri & Nio Pawnee Burlal Grou	/-0211) brara HDD's re nd (RV-0218)	ealign (RV-0212		y affect cost; cros	sings, induction	n bends, etc.	):	
BLM Land (RV-0202- Northern Border (RV Little Missouri & Nio Pawnee Burlal Groun ADDITIONAL IMPAC	7-0211) Ibrara HDD's rend (RV-0218) TS (Please incl	ealign (RV-0212	nal impacts which ma	y affect cost; cros	1	n bends, etc.	):	
BLM Land (RV-0202- Northern Border (RV Little Missouri & Nio Pawnee Burlal Ground ADDITIONAL IMPAC	7-0211) Ibrara HDD's rend (RV-0218) TS (Please incl	ealign (RV-0212	nal impacts which ma	y affect cost; cros	esings, induction	n bends, etc.	):	No
BLM Land (RV-0202- Northern Border (RV Little Missouri & Nio Pawnee Burlal Groun ADDITIONAL IMPAC	7-0211) Ibrara HDD's rend (RV-0218) TS (Please incl	ealign (RV-0212	nal impacts which ma	y affect cost; cros	1	n bends, etc.)	):	No
BLM Land (RV-0202- Northern Border (RV Little Missouri & Nio Pawnee Burlal Ground ADDITIONAL IMPAC  Is there an increase/d If yes, please list:	7-0211) Ibrara HDD's rend (RV-0218)  TS (Please included in the lecrease in th	ude any addition	nal impacts which ma	y affect cost; cros	1			No
BLM Land (RV-0202- Northern Border (RV Little Missouri & Nio Pawnee Burlal Ground ADDITIONAL IMPAC	7-0211) Ibrara HDD's rend (RV-0218) TS (Please incl	ude any addition	nal impacts which ma	y affect cost; cros	Yes		oy:	No

#### KEYSTONE PIPELINE PROJECT - U.S. PHASE IV (STEELE CITY SEGMENT)

		.S. PHASE IV (STEELE CITY SEGMENT) AUTHORIZATION FORM
	6/28/2011  BLM Land (RV-0202-0208, RV-0210)  Northern Border (RV-0211)  Little Missouri & Niobrara HDD's realign (RV-0212)  Pawmee Burial Ground (RV-0218)	Tracking Number:   202-0208, RV-0210-0212, RV   MP:   XXX.X   to   XXX.X
Universal Fi Comments:	eld - Land Doug Reichley	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected Why?  Day 9 1-0-145/()
TransCanad Comments:	BLM reroutes to be filed post POD recipot	Variation: seproved X Rejected  Plate: 6/20 & 6/21/2011  If Rejected Why?
Exp - Engine Comments:	ering Butch Wallace	Variation: Actioned X Rejected  CWA Date: 6/20 & 6/21/2011  If Rejected Why?
TransCanada Comments:	HORTHORN Bobby Curbow  NORTHORN  SOLDER HAD ZSO  CHANGE	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected Why?
Exp - Enviror Comments:	Perding all Survey	Variation: Approve X Rejected  Date: 6/20 & 6/21/2011  If Rejected Why?
TransCanada Comments:	- Environmental Stephen Craycroft	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected Why?
Exp - Safety  Comments:	Jason Millenbruch	Variation: Approved N/A Rejected Date:
Facilities: Comments:	Sandra Gigovic	Variation: Approved N/A Rejected Date:  If Rejected Why?
TrensCanada Comments:	Senior PM  Alan Lietz  Cand of Town   4000 47  Pending appropriate  Regulatory approvals	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected Why?
TransCanada Comments:	-Manager Steve Marr	Variation: Approved Rejected  Date: If Rejected
M B	oug Reichley X Jonathan I I I I I I I I I I I I I I I I I I I	raycroft X Steve Marr X

RV-0202-0208, RV-0210-0212, RV-0218

#### KEYSTONE PIPELINE PROJECT - U.S. PHASE IV (STEELE CITY SEGMENT)

	KEYSTONE PIPELINE PROJECT - U ROUTE VARIATION	.S. PHASE IV (STEELE CITY SEGMENT) AUTHORIZATION FORM
Date: Description:	6/28/2011  BLM Land (RV-0202-0208, RV-0210)  Northern Border (RV-0211)  Little Missouri & Niobrara HDD's realign (RV-0212)  Pawnee Burlai Ground (RV-0218)	Tracking Number: 202-0208, RV-0210-0212, RV  MP: XXXX to XXXX  Originated By: Multiple  Variation Form Attached: Yes X No
Universal Fi Comments:	eld - Land Doug Reichley	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected Why?
The Later of the L	ia- Engineering Meera Kothari By David Guien	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected  Why?
Exp - Engine Comments:	edring Butch Wallace	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected
TransCanad Comments:	a - Construction Bobby Curbow	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011
Exo - Enviro Comments:	amental Jonathan Minton	Why?  Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected Why?
THE PARTY NAMED IN	ik Assesment Heidi Tiliquist	Variation: Approved N/A Rejected Date: If Rejected Why?
Exp - Safety Comments:	Jason Millenbruch	Variation: Approved N/A Rejected Date:
Facilities: Comments:	Sandra Gigovic N/A. Does not affect Facilities.	Variation: Approved N/A Rejected  Date:  If Rejected Why?
TransCanada Comments:	-Senior PM Conditional approved  Partitle appropriate Legillatory approved	Variation: Approved X Rejected  Date: 6/20 & 6/21/2011  If Rejected Why?
TransCanada Comments:	-Manager Sleve Marr	Variation: Approved Rejected Date:  If Rejected Why?
	Doug Reichley X Jonathan Meera Kothari X Heldi Tiliq Butch Wallace X Jason Mill Sobby Curbow X Sandra Gl	uist X Steve Marr X enbruch X

RV-0202-0208, RV-0210-0212, RV-0218

SVV

#### TransCanada PROPOSED ROUTE VARIATION 0212-01 Γ21N R 2E HARDING CO. - SOUTH DAKOT T 21N R 2E ML-SD-HA-00330.0 ML-SD-HA-00410.000 RONALD BROWN AND SHERYL L. BROWN LEGEND **Keystone Phase IV, US exp** Energy Services Inc. Ziebach Perkins Gregory Proposed Route Variation 0212-01 t: +1.850.385.5441 | f: +1.850.385.5523 1300 Metropolitan Blvd. Tallahassee, FL 32308 U.S.A. 300 FT CORRIDOR PHASE IV CL (2010-11-18) PROPERTY PARCEL COUNTY: Harding CHECKED BY: STATE: PROPOSED ROUTE VARIATION CULTURAL SITE 1 OF 1 APPROVED BY: RG SHEET: Keya Paha SECTION LINE RV FULL: 0212-SD-P2-293.0-294.0-S NE DATE ACCESS ROAD WATERBODY The new identity of Trow Engineering Consultants, Inc. **PRELIMINARY** $\bigcirc$ PUMP STATION Keystone Phase IV, US • BUILDINGS • EARTH & ENVIRONMENT • ENERGY • • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY • VALVE SITE THES0050388X XL-00-P-9178 REV. NO.: