

**DuBose**  
**National Energy Services, Inc.**

September 19, 1996

Gregory C. Cwalina, Chief  
Vendor Inspection Section  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Reference: Docket No.: 99900861

Dear Sir:

The material that you referenced in the above letter, which was supplied to Southern California Edison Company, was 3/4"-10 SA194 Grade 7 Nuts - Heat Code "PH". These nuts were manufactured by Korea Bolt with the heat code forged into each piece and were purchased through A & G Engineering II. The forging of the heat code on every piece precludes the possibility of mixing the material by any distributor through which it passed.

After the return of this material from the customer, tests were performed on an additional sampling of this product and the results are attached. These nuts were subjected to a System 21 gaging, proof loading, and chemical analysis and all material passed these tests and meets material specifications. The 15 additional test showed slight variations in all elements, which is usual. The variations in chrome is the most pronounced but all results are well within specifications.

ASTM A29 Table 3 & 4 provide guidance for chemical acceptance ranges within any given heat of steel. The

9610170259 960919  
PDR GA999 E\*\*\*\*\*  
PDR

(910) 590-2151 • 1-800-590-2150 • FAX (910) 590-3555  
P.O. Box 499 • Clinton, NC 28328

170061

96-127  
**NRC FILE CENTER COPY**

11  
IE09  
ID#R-13 VENDOR INSPECTIONS

**DuBose  
National Energy Services, Inc.**

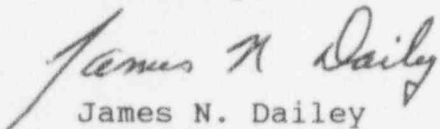
variances in this material fall within the limits established in Table 4 of this specification. In our discussions with some of the domestic steel producers, we were advised that slight variances in chrome is not necessarily an indication of mixed heats. This condition can be caused simply by the lack of complete mixing in the melt process.

Based on the information provided above, we feel that there is no conclusive evidence that these nuts are from mixed heats of material. There is also no indication of any safety hazard as related to the use of this material.

This information is being provided to you in hopes that it will address the concern expressed in your letter. We are also sending a copy of our response and the results of the additional testing to the customers that have received this product from us. (See list attached).

If further information or action on our part is required, please advise.

Sincerely,



James N. Dailey  
Quality Assurance Manager

cc: Carl M. Rogers / President

**DuBose  
National Energy Services, Inc.**

3/4" - 10 Heavy Hex Nuts SA194 Grade 7 / Heat Code: "PH"  
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Union Pump	PO# 48703
Union Pump	PO# 47945
Carolina Power and Light	PO# 7M0502-AS
Union Pump	PO# 54009
Union Pump	PO# 61971
Southern California Edison	PO# 6N236016

10610

DUBOSE  
QA REVIEW  
SATISFACTORY  
5/12/93  
INITIAL DATE

DUBOSE STEEL INC

A & G ENGINEERING II INC  
P O BOX 176  
29910 DHANA CIRCLE  
LAKE ELSINORE CA 92530

REPORT No. 2-8-93

PARTS MARKED NCA 3866.6

CUSTOMER P.O. No. 2284-63

A & G PACKING LIST No. 06922

SPECIFICATIONS ASME SA 194 Gr. 7  
NCA 3800 Sec. III Code Year 1989 Code  
Class NB 1 Thru 1989 addenda

NUCLEAR REPORT OF PHYSICAL AND CHEMICAL TESTS  
AND CERTIFICATION OF COMPLIANCE

10 CFR 50 Appen B -- 10 CFR 21 Applies

Description	Material	Quantity	No Pcs Tested	Hardness After 24 Hrs. at 540°C	Ultimate Tensile or Proof Load	Yield Strength	Elong %	RA %	Hardness	Heat Treat Data
11 5/8-11 UNC(2B) Hvy Hex Nuts ASME SA 194 Gr. 7	4140	16,200	3	HB 255	39,550 Lbs	P104			RC 28	640°C
12 3/4-10 UNC(2B) Hvy Hex Nuts ASME SA 194 Gr. 7	4140	9,000	3	HB 262	58,450 Lbs	P112			RC 27	640°C
13 1"-8 UNC(2B) Hvy Hex Nuts ASME SA 194 Gr. 7	4140	4,500	2	HB 262	106,000 Lbs	P109			RC 26	640°C

Item No.	VISUAL INSPECTION SA614 RU			Heat Number	C	Mn	Si	S	P	Cr	Ni	Mo	V			
	No Tested	Accepted	Rejected													
11	16,200	16,200	0	Y103066 Heat Code OP	.40	.79	.18	.013	.023	1.02		.15				
12	9,000	9,000	0	RR1298 Heat Code PH	.40	.79	.26	.020	.024	.86		.16				
13	4,500	4,500	0	RR 1298 Heat Code RD	.40	.79	.26	.020	.024	.86		.16				
Charpy Impact tests, V notch type A at -					10MM X 10 MM Specimens. Methods per A 370											
					Ft Pounds				Shear %				Mils Lat Exp			
Coupon Heat					Y103066				24/22/24							
Coupon Heat					RR1298				23/22/22							
Coupon Heat					RR1298				21/22/22							

A&G QSC # 456 EXPIRES JUNE 11, 1994

MATERIAL MANUFACTURED/SUPPLIED IN ACCORDANCE WITH

DUBOSE STEEL INC P.O. # 2284-63

NO WELD REPAIR PERFORMED ON THE MATERIAL

We certify that the contents of this report are correct and accurate and that all test results and operations were in compliance with requirements of the material specifications and specific requirements of Section III paragraphs designated by the purchaser.

W.R. Cook  
W.R. Cook Quality Assurance

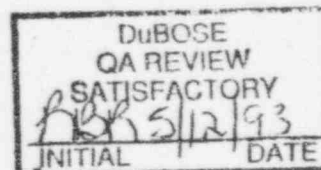
# INSPECTION CERTIFICATE

To: A & G ENGINEERING

Sheet No.: KBQC-MT- 65

Date of Issue: OCT. 16, 1991.

Description: ASME/ASTM A194 GRADE 7, HEAVY HEX NUTS



KOREA BOLT IND. CO., LTD.

SALES OFFICE: 620-34, GOROD-DONG, GOROD-KU,

SEOUL, KOREA  
TEL: 835-1311/5  
TELEX: K25917 KOBOLT  
FAX: 675-3709

FACTORY: B4-11, BANWOL INDUSTRIAL ESTATE,

ANSAN CITY, KYUNGGI-DO, KOREA  
TEL: (0345) 491-3081/5  
FAX: (0345) 491-3768

Test Piece No.	Specification	Tension Test				Hardness Test HRC	Heat No.	Chemical Composition (%)								Heat Code Stamping	Remarks Sample No after heat treatment 590°C/24h HB201min.
		Yield Strength	Tensile Strength	Elongation %	Reduction of Area %			C	Si	Mn	P	S	Cr	Mo	B		
			Proof Load lbf					x 100	x 100	x 100	x 1000	x 1000	x 100	x 100	x 10000		
	Size					24 - 38 min. max.											
1	5/8 - 11UNC		39,550 Good			28.0	Y141823	42	26	76	18	13	88	17		OH	269
2	"		"			29.0	"	"	"	"	"	"	"	"		"	-
3	"		"			28.5	"	"	"	"	"	"	"	"		"	-
4	"		"			28.0	"	"	"	"	"	"	"	"		"	-
5	"		"			27.5	"	"	"	"	"	"	"	"		"	-
6	3/4 - 10UNC		58,450 Good			27.0	RR1298	40	26	79	24	20	86	16		PH	262
7	"		"			29.0	"	"	"	"	"	"	"	"		"	-
8	"		"			28.0	"	"	"	"	"	"	"	"		"	-
9	"		"			26.0	"	"	"	"	"	"	"	"		"	-
10	"		"			29.0	"	"	"	"	"	"	"	"		"	-

Reference: Material manufactured in accordance with KOREA BOLT IND. CO., LTD. Q.A program and manual dated 1-4-91, and heat treating procedure dated 7-13-82, which was surveyed, audited and approved by A&G engineering on 8-1-91. No welding was performed on the material.

This is to certify that the above results are true and correct in every detail.

IN SUB CHOE

Chief of Quality Control Dept.



**DuBose**  
**National Energy Services, Inc.**

Date/Time : 06.05.96 09:10:12 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 1  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.378	0.814	0.0220	0.0121	0.202	1.02

Mo %  
0.179

Date/Time : 06.05.96 09:18:39 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 2  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.397	0.776	0.0206	0.0120	0.265	0.858

Mo %  
0.166

Date/Time : 06.05.96 09:19:21 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 3  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.405	0.780	0.0196	0.0109	0.264	0.862

Mo %  
0.167

**DuBose**  
**National Energy Services, Inc.**

Date/Time : 06.05.96 09:19:35 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 4  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.397	0.781	0.0202	0.0121	0.267	0.863

Mo %  
0.168

Date/Time : 06.05.96 09:19:36 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 5  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.349	0.704	0.0396	0.0239	0.259	0.808

Mo %  
0.158

Date/Time : 06.05.96 09:19:37 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 6  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.384	0.712	0.0421	0.0258	0.260	0.819

Mo %  
0.162

**DuBose**  
**National Energy Services, Inc.**

Date/Time : 06.05.96 09:19:38 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 7  
Quality :  
Heat No. : PH  
Material : 3/4-10 H HY NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.408	0.730	0.0448	0.0275	0.263	0.830

Mo %  
0.165

Date/Time : 06.05.96 09:19:46 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 8  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.383	0.731	0.0359	0.0187	0.201	0.994

Mo %  
0.193

Date/Time : 06.05.96 09:19:47 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 9  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.394	0.701	0.0344	0.0178	0.264	0.835

Mo %  
0.180

**DuBose**  
**National Energy Services, Inc.**

Date/Time : 06.05.96 09:19:49 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 11  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.378	0.710	0.0424	0.0253	0.258	0.815

Mo %  
0.160

Date/Time : 06.05.96 09:19:49 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 10  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.381	0.729	0.0375	0.0182	0.201	0.992

Mo %  
0.192

Date/Time : 06.05.96 09:19:51 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 12  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.398	0.702	0.0341	0.0177	0.261	0.833

Mo %  
0.179

**DuBose**  
**National Energy Services, Inc.**

Date/Time : 06.05.96 09:19:54 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 13  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.396	0.698	0.0332	0.0170	0.261	0.831

Mo %  
0.178

Date/Time : 06.05.96 09:19:59 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 14  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.388	0.792	0.0382	0.0180	0.200	0.994

Mo %  
0.191

Date/Time : 06.05.96 11:08:33 Mark : Program : a&g  
Status : 1 Type : 0 Instrument: Weight :  
Trace No. : 15  
Quality :  
Heat No. : PH  
Material : 3/4-10 H H NUT SA194 GRADE 7

C %	Mn %	P %	S %	Si %	Cr %
0.384	0.725	0.0314	0.0285	0.271	0.807

Mo %  
0.157