

Recent Issue in Korea (Report Forgery Investigation)



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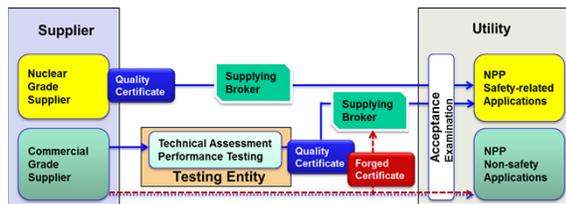


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HISTORICAL BACKGROUND



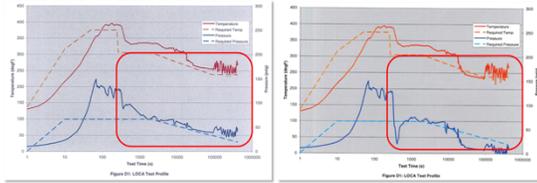
- In Nov. 2012, KHNP reported that sixty (60) CGD reports were counterfeited
 - NSSC formed the regulator-public joint investigation team to conduct complete enumeration investigations.
 - Counterfeited test reports were discovered also in the certificates of nuclear grade items during the follow-up investigation.
- * The forgery investigation started in Jan. 2013 is still undergoing.



HISTORICAL BACKGROUND



- NSSC received forgery information through the tip-off channel
 - The EQ report of control cables supplied to Shin-Kori 1 & 2 and Shin-Wolsong 1 & 2 were falsified
 - Test results in the EQ reports were falsified by the EQ testing entity



Forged Test Profile

Original Test Profile

SUMMARY OF INVESTIGATION



- 6 reactors were related with the falsified EQ reports
 - 3 reactors (Shin-Kori 1&2 and Shin-Wolsong 1) were in operation
 - 3 reactors (Shin-Kori 3&4 and Shin-Wolsong 2) were under construction
- NSSC decided the complete enumeration forgery investigation of domestically supplied items
 - For all NPPs
 - For all type of test reports including EQ reports

SUMMARY OF INVESTIGATION



	Test report	EQ report
Scope	Past 10 years (2003 ~ 2012)	EQ reports issued since October 1996
Subject	<ul style="list-style-type: none"> • Reports issued by the domestic or foreign testing entities among QVDs submitted by the domestic Suppliers • Reports issued by foreign testing entities among QVDs submitted by foreign Suppliers¹⁾ 	<ul style="list-style-type: none"> • Reports submitted by domestic suppliers and issued by domestic or overseas EQ entities * Including non-safety grade items with Seismic Category I (based on FSAR)
Method	<ul style="list-style-type: none"> • Domestic: Site visits • Oversea: Official letters, e-mail or site visits 	<ul style="list-style-type: none"> • Review test validity by checking the raw data • Enquiry to the issuer or comparison with the original reports sent by EQ entities

¹⁾'08~'10 sample investigation was performed by the Audit Bureau

TEST REPORT INVESTIGATION



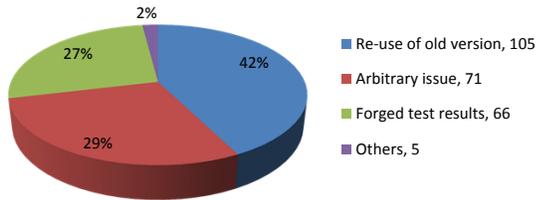
For domestic Suppliers

- Investigation completed for all NPPs in operation or under construction

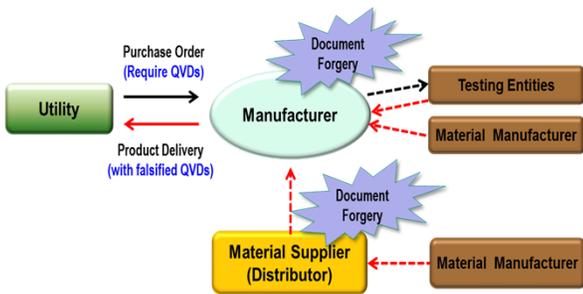
Category	Number of test reports	Results	
		Falsified	Unidentified
Reports of replaced parts for 23 reactors	21,681	247 (1.14%)	408
Reports of items for 3 recently commissioned reactors	104,606	944 (0.90%)	677
Reports of items for NPPs under construction (1 unit of OPR1000, 4 units of APR1400)	163,696	923(0.56%)	2,323
Total	289,983	2,114	3,408

Type of falsification

- Analysis of 247 falsified reports of replaced parts

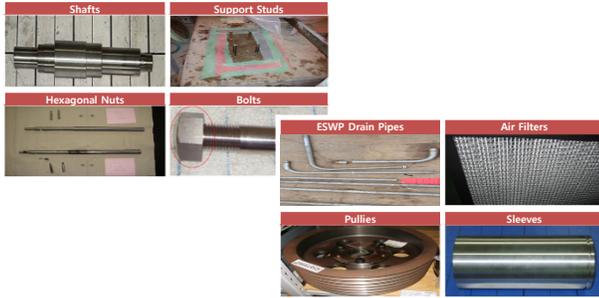


Typical route of test report falsification





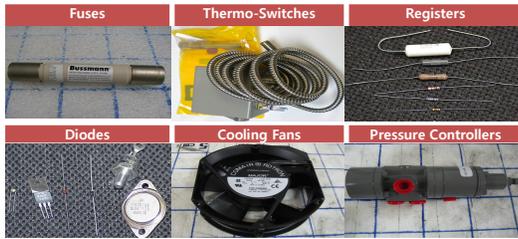
Typical items supplied with the falsified test reports





Typical falsely dedicated items

- Items quipped in operating reactors (KHNP reported 136 items)
 - Fuses (47), Relays (29), Electronics parts (20), Instrumentations (12), Electronics modules (7), Power switches (9), Electric parts (12)
- Examples of falsely certified items



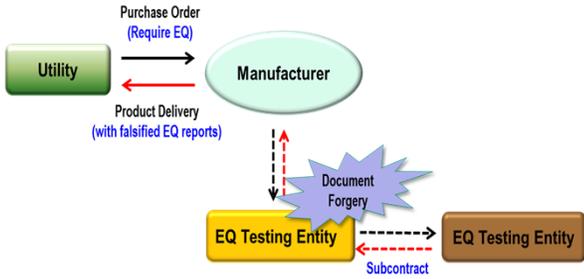
EQ REPORT INVESTIGATION



- For all items supplied by domestic manufacturers, the investigation of EQ test reports issued by domestic and foreign testing entities was completed.
 - Currently, corrective actions such as re-test, re-analysis, replacement are in-progress

Equipment Qualification	Environmental Qualification			Seismic Qualification			Total		
	Objects	Forged	Unclear	Objects	Forged	Unclear	Objects	Forged	Unclear
20 reactors in operation	342	20	2	689	10	5	1,031	30	7
3 recently commissioned reactors & 5 new reactors	159	13	8	1509	19	38	1,668	32	46
Total (Domestic)	501	33	10	2,198	29	43	2,699	62	53

Typical route of EQ report falsification



REGULATORY POSITION - forged test reports

- For items supplied with falsified test reports,
 - the installation status shall be identified, and
 - the impact on safety shall be analyzed.
- * Items identified to impact safety function of relevant SSCs shall be replaced
- For items for which investigators could not verify genuine test reports
 - Supplier should provide the evidence showing genuine, or
 - The items shall be replaced or retested



REGULATORY POSITION - forged EQ reports

- The utility shall prove that the equipment shows required performance at the prescribed mild/harsh conditions .
- Or
- The equipment shall be replaced by properly qualified substitutes as soon as practicable.



Seismic Test Setup of Fire Pump Controller Panel

CORRECTIVE ACTION STATUS



Test report

Category	Decided to replace	Replaced	To be replaced	Expected completion date
Related reactors	22 units	13 units	9 units	Mar.~ Nov., 2014
# of items	553	508	45	
# of parts	7,705	7,261	404	

EQ report

Category	# of Nonconforming reports	Forged	Unclear	Remarks
20 reactors in operation	37	30	7	Corrective actions such as retest, reanalysis, or replacement are in-progress ^(*)
3 reactors recently commissioned	78	32	46	

^(*) Corrective actions completed in 7 NPPs (13 units)

COUNTERMEASURES



- Encourage anonymous report, “Nuclear Safety Ombudsman”
- Strengthen the oversight of equipment testing entities
- Introduce regulatory program for supply chain oversight
- Strengthen the licensee QA program – “Forgery prevention”
- Set up computerized configuration management system for all safety-related items
- Set up a system of ‘Learning from the Failure’

FUTURE PLAN



- Additional report forgery investigation to imported items
* *Listing and selection of reports to be investigated is undergoing*
- Whenever significant safety concerns occur during the investigation and assessment, an immediate action shall be imposed including the forced shutdown of the operating reactor

NOTE

The variety of CFSI cases identified through a year-long investigation will be extremely useful in strengthening our regulatory program.
