

컨트롤 파일 손상 시나리오

Case 1. 백업해 놓은 컨트롤 파일로 복구 수행_컨트롤 파일만 손상

데이터 파일과 리두 로그 파일은 손상되지 않고 컨트롤 파일만 손상되었다. **컨트롤 파일 백업본으로 복구 수행**

용이한 실습을 위해 컨트롤 파일을 하나로 설정한다.

* 현재 컨트롤 파일 확인

```
SYS@PROD1>select name  
2 from v$controlfile;
```

NAME

```
-----  
/u01/app/oracle/oradata/PROD1/control01.ctl  
/u01/app/oracle/oradata/PROD1/control02.ctl  
/u01/app/oracle/oradata/PROD1/control03.ctl
```

3 rows selected.

* 컨트롤 파일 변경

```
SYS@PROD1>alter system set  
control_files='/u01/app/oracle/oradata/PROD1/control01.ctl' scope=spfile;  
System altered.
```

* 종료 후 정상적으로 열리는지 확인

```
SYS@PROD1>shutdown immediate  
Database closed.  
Database dismounted.  
ORACLE instance shut down.
```

```
SYS@PROD1>startup  
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes  
Fixed Size 2923872 bytes  
Variable Size 452985504 bytes  
Database Buffers 771751936 bytes  
Redo Buffers 13852672 bytes  
Database mounted.  
Database opened.
```

* 컨트롤 파일 재확인

```
SYS@PROD1>select name  
2 from v$controlfile;
```

NAME

```
-----  
/u01/app/oracle/oradata/PROD1/control01.ctl
```

1 row selected.

현재 리두 로그 파일과 데이터 파일 상태 확인

```
SYS@PROD1>select group#, sequence#, members, archived, status
2  , first_change#, first_time, next_change#, next_time
3  from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	4	1	NO	CURRENT	2432720	24-JUN-20	2.8147E+14	
2	2	1	YES	INACTIVE	2416933	23-JUN-20	2425209	23-JUN-20
3	3	1	YES	INACTIVE	2425209	23-JUN-20	2432720	24-JUN-20

3 rows selected.

```
SYS@PROD1>select group#, type, member
2  from v$logfile;
```

GROUP#	TYPE	MEMBER
3	ONLINE	/u01/app/oracle/oradata/PROD1/redo03.log
2	ONLINE	/u01/app/oracle/oradata/PROD1/redo02.log
1	ONLINE	/u01/app/oracle/oradata/PROD1/redo01.log

3 rows selected.

```
SYS@PROD1>select a.file#, b.name b_name, a.name a_name
2  , a.status, a.checkpoint_change#
3  from v$datafile a, v$tablespace b
4  where a.ts# = b.ts#;
```

FILE#	B_NAME	A_NAME	STATUS	CHECKPOINT_CHANGE#
3	SYS_AUX	/u01/app/oracle/oradata/PROD1/sysaux01.dbf	ONLINE	2432942
1	SYSTEM	/u01/app/oracle/oradata/PROD1/system01.dbf	SYSTEM	2432942
4	UNDOTBS1	/u01/app/oracle/oradata/PROD1/undotbs01.dbf	ONLINE	2432942
6	USERS	/u01/app/oracle/oradata/PROD1/users01.dbf	ONLINE	2432942
5	EXAMPLE	/u01/app/oracle/oradata/PROD1/example01.dbf	ONLINE	2432942

5 rows selected.

백업 진행 전에 백업할 디렉토리를 생성하고 DB를 정상 종료한다.

* 백업 디렉토리 coldBU_6 생성

```
[oracle@edydr1p1 ~]$ cd /home/oracle/backup/arch
[oracle@edydr1p1 arch]$ mkdir coldBU_6
```

* 콜드 백업을 위해 shutdown

```
SYS@PROD1>shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
```

콜드 백업을 진행한다.

* 데이터 파일, 컨트롤 파일, 리두 로그 파일 백업

```
SYS@PROD1>! cp -av /u01/app/oracle/oradata/PROD1/*.dbf  
/home/oracle/backup/arch/coldBU_6/
```

```
`/u01/app/oracle/oradata/PROD1/example01.dbf' -> `/home/oracle/backup/arch/coldBU_6/example01.dbf'  
`/u01/app/oracle/oradata/PROD1/sysaux01.dbf' -> `/home/oracle/backup/arch/coldBU_6/sysaux01.dbf'  
`/u01/app/oracle/oradata/PROD1/system01.dbf' -> `/home/oracle/backup/arch/coldBU_6/system01.dbf'  
`/u01/app/oracle/oradata/PROD1/temp01.dbf' -> `/home/oracle/backup/arch/coldBU_6/temp01.dbf'  
`/u01/app/oracle/oradata/PROD1/undotbs01.dbf' -> `/home/oracle/backup/arch/coldBU_6/undotbs01.dbf'  
`/u01/app/oracle/oradata/PROD1/users01.dbf' -> `/home/oracle/backup/arch/coldBU_6/users01.dbf'
```

```
SYS@PROD1>! cp -av /u01/app/oracle/oradata/PROD1/*.ctl  
/home/oracle/backup/arch/coldBU_6/
```

```
`/u01/app/oracle/oradata/PROD1/control01.ctl' -> `/home/oracle/backup/arch/coldBU_6/control01.ctl'  
`/u01/app/oracle/oradata/PROD1/control02.ctl' -> `/home/oracle/backup/arch/coldBU_6/control02.ctl'  
`/u01/app/oracle/oradata/PROD1/control03.ctl' -> `/home/oracle/backup/arch/coldBU_6/control03.ctl'
```

```
SYS@PROD1>! cp -av /u01/app/oracle/oradata/PROD1/*.log  
/home/oracle/backup/arch/coldBU_6/
```

```
`/u01/app/oracle/oradata/PROD1/redo01a.log' -> `/home/oracle/backup/arch/coldBU_6/redo01a.log'  
`/u01/app/oracle/oradata/PROD1/redo01.log' -> `/home/oracle/backup/arch/coldBU_6/redo01.log'  
`/u01/app/oracle/oradata/PROD1/redo02a.log' -> `/home/oracle/backup/arch/coldBU_6/redo02a.log'  
`/u01/app/oracle/oradata/PROD1/redo02.log' -> `/home/oracle/backup/arch/coldBU_6/redo02.log'  
`/u01/app/oracle/oradata/PROD1/redo03a.log' -> `/home/oracle/backup/arch/coldBU_6/redo03a.log'  
`/u01/app/oracle/oradata/PROD1/redo03.log' -> `/home/oracle/backup/arch/coldBU_6/redo03.log'  
`/u01/app/oracle/oradata/PROD1/redo04a.log' -> `/home/oracle/backup/arch/coldBU_6/redo04a.log'  
`/u01/app/oracle/oradata/PROD1/redo04.log' -> `/home/oracle/backup/arch/coldBU_6/redo04.log'
```

* 백업된 파일 확인

```
[oracle@edydr1p1 ~]$ cd /home/oracle/backup/arch/coldBU_6
```

```
control01.ctl  example01.dbf  redo02a.log  redo03.log  sysaux01.dbf  undotbs01.dbf  
control02.ctl  redo01a.log  redo02.log  redo04a.log  system01.dbf  users01.dbf  
control03.ctl  redo01.log   redo03a.log  redo04.log  temp01.dbf
```

* 용이한 실습을 위해 사용하지 않는 파일들을 제거한다.

```
[oracle@edydr1p1 coldBU_6]$ rm control02.ctl control03.ctl  
[oracle@edydr1p1 coldBU_6]$ rm *.a.log
```

```
[oracle@edydr1p1 coldBU_6]$ ls  
control01.ctl  redo01.log  redo03.log  sysaux01.dbf  temp01.dbf  users01.dbf  
example01.dbf  redo02.log  redo04.log  system01.dbf  undotbs01.dbf
```

* 백업을 수행했기 때문에 이전 archive file 또한 필요없으니 제거한다.

```
[oracle@edydr1p1 ~]$ cd /home/oracle/arch1
```

```
[oracle@edydr1p1 arch1]$ ls  
arch_1_1_1043877350.arc  arch_1_2_1043877350.arc  arch_1_3_1043877350.arc
```

```
[oracle@edydr1p1 arch1]$ rm -f *  
[oracle@edydr1p1 arch1]$ ls
```

다시 DB를 열고 테이블을 추가한다. 작업이 끝나면 정상적으로 DB를 종료한다.

```
SYS@PROD1>startup
ORACLE instance started.
Database mounted.
Database opened.
```

```
SYS@PROD1>create table hr.emp_20
2  as
3  select *
4  from hr.employees
5  where department_id = 20;
```

Table created.

```
SYS@PROD1>select count(*)
2  from hr.emp_20;
```

```
COUNT(*)
-----
2
```

1 row selected.

```
SYS@PROD1>select group#, sequence#, members, archived, status
2  , first_change#, first_time, next_change#, next_time
3  from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	4	1	NO	CURRENT	2432720	24-JUN-20	2.8147E+14	
2	2	1	YES	INACTIVE	2416933	23-JUN-20	2425209	23-JUN-20
3	3	1	YES	INACTIVE	2425209	23-JUN-20	2432720	24-JUN-20

3 rows selected.

```
SYS@PROD1>shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
```

상황발생!! 누군가 컨트롤 파일을 지웠다.

```
SYS@PROD1>! rm -f /u01/app/oracle/oradata/PROD1/control01.ctl
```

```
SYS@PROD1>! ls /u01/app/oracle/oradata/PROD1/control01.ctl
ls: cannot access /u01/app/oracle/oradata/PROD1/control01.ctl: No such file or
directory
```

다시 DB를 오픈하려고 하자 열리지 않는다. 상황을 파악해보자.

```
SYS@PROD1>startup
ORACLE instance started.

Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size               452985504 bytes
Database Buffers            771751936 bytes
Redo Buffers                 13852672 bytes
ORA-00205: error in identifying control file, check alert log for more info
```

```
SYS@PROD1>select instance_name, status
2 from v$instance;
```

INSTANCE_NAME	STATUS
PROD1	STARTED

1 row selected.

* ALERT 로그를 확인해보니 컨트롤 파일이 없다.

```
[oracle@edydr1p1 trace]$ tail -f alert_PROD1.log
```

```
ORA-00210: cannot open the specified control file
ORA-00202: control file: '/u01/app/oracle/oradata/PROD1/control01.ctl'
ORA-27037: unable to obtain file status
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3
```

* OS레벨에서 확인해본다.

```
[oracle@edydr1p1 ~]$ cd /u01/app/oracle/oradata/PROD1
```

```
[oracle@edydr1p1 PROD1]$ ls
control02.ctl  example01.dbf  redo02a.log  redo03.log  sysaux01.dbf  undotbs01.dbf
control03.ctl  redo01a.log    redo02.log   redo04a.log  system01.dbf  users01.dbf
data01.dbf     redo01.log     redo03a.log  redo04.log   temp01.dbf
```

강제종료 후 컨트롤 파일을 복원한다.

```
SYS@PROD1>shutdown abort
ORACLE instance shut down.
```

```
SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/control01.ctl
/u01/app/oracle/oradata/PROD1/
```

```
`/home/oracle/backup/arch/coldBU_6/control01.ctl' -> `/u01/app/oracle/oradata/PROD1/control01.ctl'
```

복구 작업을 실행한다.

★ 백업 이후로 테이블을 추가한 이력이 있어 SCN이 일치하지 않아 MOUNT 상태에서 더이상 진행되지 않는다.

```
SYS@PROD1>startup
```

```
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes
```

```
Fixed Size 2923872 bytes
```

```
Variable Size 452985504 bytes
```

```
Database Buffers 771751936 bytes
```

```
Redo Buffers 13852672 bytes
```

```
Database mounted.
```

```
ORA-01122: database file 1 failed verification check
```

```
ORA-01110: data file 1: '/u01/app/oracle/oradata/PROD1/system01.dbf'
```

```
ORA-01207: file is more recent than control file - old control file
```

★ 변경이력을 업데이트 하기 위해 컨트롤 파일 복구작업을 한다.

```
SYS@PROD1>recover database using backup controlfile;
```

```
ORA-00279: change 2433220 generated at 06/24/2020 11:28:23 needed for thread 1
```

```
ORA-00289: suggestion : /home/oracle/arch1/arch_1_4_1043877350.arc
```

```
ORA-00280: change 2433220 for thread 1 is in sequence #4
```

```
Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
```

```
auto
```

```
ORA-00308: cannot open archived log '/home/oracle/arch1/arch_1_4_1043877350.arc'
```

```
ORA-27037: unable to obtain file status
```

```
Linux-x86_64 Error: 2: No such file or directory
```

```
Additional information: 3
```

```
ORA-00308: cannot open archived log '/home/oracle/arch1/arch_1_4_1043877350.arc'
```

```
ORA-27037: unable to obtain file status
```

```
Linux-x86_64 Error: 2: No such file or directory
```

```
Additional information: 3
```

★ 시퀀스 4는 CURRENT 상태였기 때문에 아카이빙 된 파일이 없어 복구하지 못했다. 리두 파일 경로를 직접 써준다.

```
SYS@PROD1>select a.group#, b.sequence#, a.member, b.bytes/1024/1024 MB,
```

```
2 b.archived, b.status, b.first_change#
```

```
3 from v$logfile a, v$log b
```

```
4 where a.group# = b.group#
```

```
5 order by 1;
```

```
GROUP# SEQUENCE# MEMBER
```

```
FIRST_CHANGE#
```

```
MB ARC STATUS
```

```
-----
```

```
-----
```

```
1 4 /u01/app/oracle/oradata/PROD1/redo01.log 50 NO CURRENT
```

```
2432720
```

```
2 2 /u01/app/oracle/oradata/PROD1/redo02.log 50 YES INACTIVE
```

```
2416933
```

```
3 3 /u01/app/oracle/oradata/PROD1/redo03.log 50 YES INACTIVE
```

```
2425209
```

```
3 rows selected.
```

```
SYS@PROD1>recover database using backup controlfile;
```

```
ORA-00279: change 2433220 generated at 06/24/2020 11:28:23 needed for thread 1
```

```
ORA-00289: suggestion : /home/oracle/arch1/arch_1_4_1043877350.arc
```

```
ORA-00280: change 2433220 for thread 1 is in sequence #4
```

```
Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
```

```
/u01/app/oracle/oradata/PROD1/redo01.log
```

```
Log applied.
```

```
Media recovery complete.
```

★ 컨트롤 파일만 복구했기 때문에 데이터 파일, 컨트롤 파일, 리두 로그 파일의 정보가 동기화되지 못했다. resetlogs 옵션으로 DB를 열어준다. (컨트롤 파일을 재생성할 때, 컨트롤 파일을 백업으로부터 가져왔을 때)

```
SYS@PROD1>alter database open resetlogs;
```

```
Database altered.
```

★ 테이블이 정상 조회된다.

```
SYS@PROD1>select count(*)  
2 from hr.emp_20;
```

```
COUNT(*)  
-----  
2
```

```
1 row selected.
```

Case 2. 컨트롤 파일을 재생성하여 복구 수행_컨트롤 파일만 손상

데이터 파일과 리두 로그 파일은 손상되지 않고 컨트롤 파일만 손상되었다. 컨트롤 파일을 재생성하여 복구 수행

현재 리두 로그 파일 상태 확인 후 콜드 백업을 수행한다.

```
SYS@PROD1>select group#, sequence#, members, archived, status
2  , first_change#, first_time, next_change#, next_time
3  from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	4	1	YES	INACTIVE	2436138	24-JUN-20	2436142	24-JUN-20
2	5	1	YES	INACTIVE	2436142	24-JUN-20	2436155	24-JUN-20
3	6	1	NO	CURRENT	2436155	24-JUN-20	2.8147E+14	

3 rows selected.

* 콜드 백업을 위해 DB shutdown

```
SYS@PROD1>shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
```

* CASE1에서 백업해 놓은 파일들을 제거한다.

```
[oracle@edydr1p1 coldBU_6]$ ls
control01.ctl redo01.log redo03.log sysaux01.dbf temp01.dbf users01.dbf
example01.dbf redo02.log redo04.log system01.dbf undotbs01.dbf
```

```
[oracle@edydr1p1 coldBU_6]$ rm *.*
[oracle@edydr1p1 coldBU_6]$ ls
[oracle@edydr1p1 coldBU_6]$
```

* 콜드 백업 수행

```
SYS@PROD1>! cp -av /u01/app/oracle/oradata/PROD1/*.*
/home/oracle/backup/arch/coldBU_6/
```

```
`/u01/app/oracle/oradata/PROD1/control01.ctl' -> `/home/oracle/backup/arch/coldBU_6/control01.ctl'
`/u01/app/oracle/oradata/PROD1/control02.ctl' -> `/home/oracle/backup/arch/coldBU_6/control02.ctl'
`/u01/app/oracle/oradata/PROD1/control03.ctl' -> `/home/oracle/backup/arch/coldBU_6/control03.ctl'
`/u01/app/oracle/oradata/PROD1/example01.dbf' -> `/home/oracle/backup/arch/coldBU_6/example01.dbf'
`/u01/app/oracle/oradata/PROD1/redo02a.log' -> `/home/oracle/backup/arch/coldBU_6/redo02a.log'
`/u01/app/oracle/oradata/PROD1/redo02.log' -> `/home/oracle/backup/arch/coldBU_6/redo02.log'
`/u01/app/oracle/oradata/PROD1/redo03a.log' -> `/home/oracle/backup/arch/coldBU_6/redo03a.log'
`/u01/app/oracle/oradata/PROD1/redo03.log' -> `/home/oracle/backup/arch/coldBU_6/redo03.log'
`/u01/app/oracle/oradata/PROD1/redo04a.log' -> `/home/oracle/backup/arch/coldBU_6/redo04a.log'
`/u01/app/oracle/oradata/PROD1/redo04.log' -> `/home/oracle/backup/arch/coldBU_6/redo04.log'
`/u01/app/oracle/oradata/PROD1/sysaux01.dbf' -> `/home/oracle/backup/arch/coldBU_6/sysaux01.dbf'
`/u01/app/oracle/oradata/PROD1/system01.dbf' -> `/home/oracle/backup/arch/coldBU_6/system01.dbf'
`/u01/app/oracle/oradata/PROD1/temp01.dbf' -> `/home/oracle/backup/arch/coldBU_6/temp01.dbf'
`/u01/app/oracle/oradata/PROD1/undotbs01.dbf' -> `/home/oracle/backup/arch/coldBU_6/undotbs01.dbf'
`/u01/app/oracle/oradata/PROD1/users01.dbf' -> `/home/oracle/backup/arch/coldBU_6/users01.dbf'
```

* 백업을 수행했기 때문에 이전 archive file 또한 필요없으니 제거한다.

```
[oracle@edydr1p1 arch1]$ ls
arch_1_1_1043935856.arc arch_1_2_1043935856.arc arch_1_3_1043935856.arc
arch_1_4_1043935856.arc arch_1_2_1043877350.arc arch_1_3_1043877350.arc
arch_1_4_1043877350.arc arch_1_5_1043935856.arc
```



```
[oracle@edydr1p1 arch1]$ rm *.*
[oracle@edydr1p1 arch1]$ ls
[oracle@edydr1p1 arch1]$
```

상황발생!! 누군가 컨트롤 파일을 지웠다.

```
SYS@PROD1>! rm /u01/app/oracle/oradata/PROD1/control01.ctl

SYS@PROD1>! ls /u01/app/oracle/oradata/PROD1/control01.ctl
ls: cannot access /u01/app/oracle/oradata/PROD1/control01.ctl: No such file or
directory
```

파일이 삭제된지 모르고 작업을 계속 수행한다.

```
SYS@PROD1>alter system switch logfile;
System altered.

SYS@PROD1>/
System altered.

SYS@PROD1>alter system checkpoint;
System altered.

SYS@PROD1>select group#, sequence#, members, archived, status
2  , first_change#, first_time, next_change#, next_time
3  from v$log;

  GROUP#  SEQUENCE#  MEMBERS ARC STATUS          FIRST_CHANGE# FIRST_TIM NEXT_CHANGE# NEXT_TIME
-----
1         7         1 YES INACTIVE          2437531 24-JUN-20      2437554 24-JUN-20
2         8         1 NO  CURRENT          2437554 24-JUN-20      2.8147E+14
3         6         1 YES INACTIVE          2436155 24-JUN-20      2437531 24-JUN-20

3 rows selected.
```

새로운 세션에서 접속을 시도하려고 할 때 컨트롤 파일의 유실로 DB가 오픈되지 못한다.

```
login as: oracle
oracle@192.168.56.102's password:
Last login: Wed Jun 24 13:22:54 2020 from 192.168.56.1
[oracle@edydr1p1 ~]$ . oraenv
ORACLE_SID = [orcl] ? PROD1
The Oracle base remains unchanged with value /u01/app/oracle

[oracle@edydr1p1 ~]$ sqlplus / as sysdba

SYS@PROD1>select name
2  from v$database;
from v$database
*
ERROR at line 2:
ORA-00210: cannot open the specified control file
ORA-00202: control file: '/u01/app/oracle/oradata/PROD1/control01.ctl'
ORA-27041: unable to open file
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3
```

★ 강제로 DB를 종료한 후 컨트롤 파일 복원을 수행한다.

```
SYS@PROD1>shutdown abort
ORACLE instance shut down.
```

```
SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/control01.ctl
/u01/app/oracle/oradata/PROD1/
```

```
`/home/oracle/backup/arch/coldBU_6/control01.ctl' -> `/u01/app/oracle/oradata/PROD1/control01.ctl'
```

* 백업 이후로 로그 스위치 한 이력이 있어 SCN이 일치하지 않아 MOUNT 상태에서 더이상 진행되지 못한다.

```
SYS@PROD1>startup mount
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size               452985504 bytes
Database Buffers            771751936 bytes
Redo Buffers                 13852672 bytes
Database mounted.
```

```
SYS@PROD1>recover database;
ORA-00283: recovery session canceled due to errors
ORA-01122: database file 1 failed verification check
ORA-01110: data file 1: '/u01/app/oracle/oradata/PROD1/system01.dbf'
ORA-01207: file is more recent than control file - old control file
```

control.sql 파일로 복구한다.

* control.sql 파일 생성

```
SYS@PROD1>alter database backup controlfile to trace as '/home/oracle/control.sql';
```

```
Database altered.
```

* DB 강제 종료 후 control.sql 파일 수정

```
SYS@PROD1>shutdown abort
ORACLE instance shut down.
```

```
[oracle@edydr1p1 ~]$ vi control.sql
```

```
STARTUP NOMOUNT
CREATE CONTROLFILE REUSE DATABASE "PROD1" NORESETLOGS ARCHIVELOG
    MAXLOGFILES 16
    MAXLOGMEMBERS 3
    MAXDATAFILES 100
    MAXINSTANCES 8
    MAXLOGHISTORY 292
LOGFILE
  GROUP 1 '/u01/app/oracle/oradata/PROD1/redo01.log' SIZE 50M BLOCKSIZE 512,
  GROUP 2 '/u01/app/oracle/oradata/PROD1/redo02.log' SIZE 50M BLOCKSIZE 512,
  GROUP 3 '/u01/app/oracle/oradata/PROD1/redo03.log' SIZE 50M BLOCKSIZE 512
-- STANDBY LOGFILE
DATAFILE
  '/u01/app/oracle/oradata/PROD1/system01.dbf',
  '/u01/app/oracle/oradata/PROD1/sysaux01.dbf',
  '/u01/app/oracle/oradata/PROD1/undotbs01.dbf',
  '/u01/app/oracle/oradata/PROD1/example01.dbf',
  '/u01/app/oracle/oradata/PROD1/users01.dbf'
CHARACTER SET AL32UTF8
;
```

>> 해당 텍스트만 남기고 모두 지운다.

* DB를 오픈하면 control 파일로 복구된다.

```
[oracle@edydr1p1 ~]$ sqlplus / as sysdba
```

```
SYS@PROD1>@control.sql  
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes  
Fixed Size                  2923872 bytes  
Variable Size               452985504 bytes  
Database Buffers            771751936 bytes  
Redo Buffers                 13852672 bytes
```

```
Control file created.
```

```
SYS@PROD1>recover database;  
Media recovery complete.
```

```
SYS@PROD1>alter database open;  
Database altered.
```

```
SYS@PROD1>select group#, sequence#, members, archived, status  
2 , first_change#, first_time, next_change#, next_time  
3 from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	7	1	YES	INACTIVE	2437531	24-JUN-20	2437554	24-JUN-20
2	8	1	YES	INACTIVE	2437554	24-JUN-20	2637705	24-JUN-20
3	9	1	NO	CURRENT	2637705	24-JUN-20	2.8147E+14	

```
3 rows selected.
```

Case 3. 백업해 놓은 컨트롤 파일로 복구 수행_데이터 파일과 컨트롤 파일 손상

데이터 파일과 컨트롤 파일이 손상된 상태이며 리두 로그 파일은 손상되지 않았다. 컨트롤 파일 백업본으로 복구 수행

현재 로그상태 확인

```
SYS@PROD1>select group#, sequence#, members, archived, status
2  , first_change#, first_time, next_change#, next_time
3  from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	10	1	NO	CURRENT	2638713	24-JUN-20	2.8147E+14	
2	8	1	YES	INACTIVE	2437554	24-JUN-20	2637705	24-JUN-20
3	9	1	YES	INACTIVE	2637705	24-JUN-20	2638713	24-JUN-20

3 rows selected.

```
[oracle@edydr1p1 arch1]$ ls
arch_1_6_1043935856.arc  arch_1_7_1043935856.arc
arch_1_8_1043935856.arc  arch_1_9_1043935856.arc
```

* LSN 10번에서 테이블을 생성한다.

```
SYS@PROD1>create table hr.emp_50
2  as
3  select *
4  from hr.employees
5  where department_id = 50;
```

Table created.

```
SYS@PROD1>select count(*)
2  from hr.emp_50;
```

COUNT(*)
45

1 row selected.

```
SYS@PROD1>alter system switch logfile;
System altered.

SYS@PROD1>/
System altered.

SYS@PROD1>/
System altered.

SYS@PROD1>select a.group#, b.sequence#, a.member, b.bytes/1024/1024 MB,
2  b.archived, b.status, b.first_change#
3  from v$logfile a, v$log b
4  where a.group# = b.group#
5  order by 1;
```

GROUP#	SEQUENCE#	MEMBER	MB	ARC	STATUS

1	13	/u01/app/oracle/oradata/PROD1/redo01.log	50	NO	CURRENT
2	11	/u01/app/oracle/oradata/PROD1/redo02.log	50	YES	INACTIVE
3	12	/u01/app/oracle/oradata/PROD1/redo03.log	50	YES	INACTIVE

3 rows selected.

```
[oracle@edydr1p1 arch1]$ ls
arch_1_10_1043935856.arc  arch_1_12_1043935856.arc  arch_1_7_1043935856.arc
arch_1_9_1043935856.arc  arch_1_11_1043935856.arc  arch_1_6_1043935856.arc
arch_1_8_1043935856.arc
```

상황발생!! 누군가 컨트롤 파일과 데이터 파일을 지웠다.

```
SYS@PROD1>! rm -f /u01/app/oracle/oradata/PROD1/*.dbf
SYS@PROD1>! rm -f /u01/app/oracle/oradata/PROD1/*.ctl
```

지워진 사실을 모른채 해당 세션에서는 여전히 작업한다.

```
SYS@PROD1>alter system checkpoint;
System altered.

SYS@PROD1>/
System altered.

SYS@PROD1>/
System altered.

SYS@PROD1>/
System altered.

[oracle@edydr1p1 arch1]$ ls
arch_1_10_1043935856.arc  arch_1_12_1043935856.arc  arch_1_7_1043935856.arc
arch_1_9_1043935856.arc  arch_1_11_1043935856.arc  arch_1_6_1043935856.arc
arch_1_8_1043935856.arc

SYS@PROD1>select status
2 from v$instance;

STATUS
-----
OPEN
```

다른 세션에서 접속하려 하자 데이터파일과 컨트롤 파일을 찾을 수 없는 오류가 발생한다.

```

SYS@PROD1>conn hr/hr
ERROR:
ORA-02002: error while writing to audit trail
ORA-01116: error in opening database file 1
ORA-01110: data file 1: '/u01/app/oracle/oradata/PROD1/system01.dbf'
ORA-27041: unable to open file
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3
ORA-00604: error occurred at recursive SQL level 1
ORA-01116: error in opening database file 1

ORA-01110: data file 1: '/u01/app/oracle/oradata/PROD1/system01.dbf'
ORA-27041: unable to open file
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3
ORA-00604: error occurred at recursive SQL level 2
ORA-01116: error in opening database file 1
ORA-01110: data file 1: '/u01/app/oracle/oradata/PROD1/system01.dbf'
ORA-27041: unable to open file
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3
ORA-00604: error occurred at recursive SQL level 1
ORA-01116: error in opening database file 1
ORA-01110: data file 1: '/u01/app/oracle/oradata/PROD1/system01.dbf'
ORA-27041: unable to open file
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3

Warning: You are no longer connected to ORACLE.
@>exit
[oracle@edydr1p1 ~]$ sqlplus / as sysdba

SQL*Plus: Release 12.1.0.2.0 Production on Wed Jun 24 15:37:56 2020

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Connected to:
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options

SYS@PROD1>select *
  2  from v$database;
from v$database
*

ERROR at line 2:
ORA-00210: cannot open the specified control file
ORA-00202: control file: '/u01/app/oracle/oradata/PROD1/control01.ctl'
ORA-27041: unable to open file
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3

```

DB를 강제종료 한 후 컨트롤 파일과 데이터 파일을 복원한다.

```
SYS@PROD1>shutdown abort
ORACLE instance shut down.
```

```
SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/control01.ctl
/u01/app/oracle/oradata/PROD1/
```

```
`/home/oracle/backup/arch/coldBU_6/control01.ctl' -> `/u01/app/oracle/oradata/PROD1/control01.ctl'
```

```
SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/*.dbf
/u01/app/oracle/oradata/PROD1/
`/home/oracle/backup/arch/coldBU_6/example01.dbf' -> `/u01/app/oracle/oradata/PROD1/example01.dbf'
`/home/oracle/backup/arch/coldBU_6/sysaux01.dbf' -> `/u01/app/oracle/oradata/PROD1/sysaux01.dbf'
`/home/oracle/backup/arch/coldBU_6/system01.dbf' -> `/u01/app/oracle/oradata/PROD1/system01.dbf'
`/home/oracle/backup/arch/coldBU_6/temp01.dbf' -> `/u01/app/oracle/oradata/PROD1/temp01.dbf'
`/home/oracle/backup/arch/coldBU_6/undotbs01.dbf' -> `/u01/app/oracle/oradata/PROD1/undotbs01.dbf'
`/home/oracle/backup/arch/coldBU_6/users01.dbf' -> `/u01/app/oracle/oradata/PROD1/users01.dbf'
```

복구를 위해 DB를 MOUNT한다.

```
SYS@PROD1>conn / as sysdba
Connected to an idle instance.
```

```
SYS@PROD1>startup mount
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size               452985504 bytes
Database Buffers           771751936 bytes
Redo Buffers                13852672 bytes
Database mounted.
```

★ 마운트 후 오픈하려 하자 세션이 종료되었다.

```
SYS@PROD1>alter database open;
alter database open
*
ERROR at line 1:
ORA-03113: end-of-file on communication channel
Process ID: 7596
Session ID: 1 Serial number: 1733
```

★ 상태를 확인해보려 해도 연결되지 않았다.

```
SYS@PROD1>select status
  2  from v$instance;
ERROR:
ORA-03114: not connected to ORACLE
```

★ 다시 마운트 상태로 열 수도 없었다.

```
SYS@PROD1>startup mount
SP2-0642: SQL*Plus internal error state 2133, context 3114:0:0
Unsafe to proceed
ORA-03114: not connected to ORACLE
```

★ 다시 돌아가 마운트 상태 startup 한다.

```
SYS@PROD1>conn / as sysdba
Connected to an idle instance.
```

```
SYS@PROD1>startup mount;
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size               452985504 bytes
Database Buffers           771751936 bytes
Redo Buffers                13852672 bytes
Database mounted.
```

컨트롤 파일과 데이터 파일을 복구한다.

```
SYS@PROD1>recover database using backup controlfile;
ORA-00279: change 2436438 generated at 06/24/2020 14:20:17 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_6_1043935856.arc
ORA-00280: change 2436438 for thread 1 is in sequence #6

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
auto
ORA-00279: change 2437531 generated at 06/24/2020 14:34:03 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_7_1043935856.arc
ORA-00280: change 2437531 for thread 1 is in sequence #7
ORA-00278: log file '/home/oracle/arch1/arch_1_6_1043935856.arc' no longer needed for this recovery

ORA-00279: change 2437554 generated at 06/24/2020 14:34:40 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_8_1043935856.arc
ORA-00280: change 2437554 for thread 1 is in sequence #8
ORA-00278: log file '/home/oracle/arch1/arch_1_7_1043935856.arc' no longer needed for this recovery
...
```

```
SYS@PROD1>recover database using backup controlfile;
ORA-00279: change 2639780 generated at 06/24/2020 15:16:48 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_13_1043935856.arc
ORA-00280: change 2639780 for thread 1 is in sequence #13
```

```
Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
/u01/app/oracle/oradata/PROD1/redo01.log
Log applied.
Media recovery complete.
```

```
SYS@PROD1>alter database open read only;
Database altered.
```

```
SYS@PROD1>select count(*)
2 from hr.emp_50;
```

```
COUNT(*)
-----
45
```

```
1 row selected.
```

다시 DB OPEN을 시도한다.


```
SYS@PROD1>shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
```

```
SYS@PROD1>startup
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size               452985504 bytes
Database Buffers            771751936 bytes
Redo Buffers                 13852672 bytes
Database mounted.
```

ORA-01589: must use RESETLOGS or NORESETLOGS option for database open

★ MOUNT 단계에서 멈춰있다.

```
SYS@PROD1>select instance_name, status
2   from v$instance;
```

INSTANCE_NAME	STATUS
PROD1	MOUNTED

1 row selected.

데이터 파일, 컨트롤 파일, 리두 로그 파일의 정보가 동기화되지 못했다. resetlogs 옵션으로 DB를 열어준다.

```
SYS@PROD1>alter database open resetlogs;
Database altered.
```

```
SYS@PROD1>select group#, sequence#, members, archived, status
2   , first_change#, first_time, next_change#, next_time
3   from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	1	1	NO	CURRENT	2640427	24-JUN-20	2.8147E+14	
2	0	1	YES	UNUSED	0		0	
3	0	1	YES	UNUSED	0		0	

3 rows selected.

```
SYS@PROD1>select count(*)
2   from hr.emp_50;
```

COUNT (*)
45

1 row selected.

Case 4. 백업해 놓은 컨트롤 파일로 복구 수행_리두 로그 파일과 컨트롤 파일 손상

리두 로그 파일과 컨트롤 파일이 손상된 상태이며 데이터 파일은 손상되지 않았다. **컨트롤 파일 백업본으로 복구 수행**

백업본 받아오기 (초기화)

```
SYS@PROD1>shutdown abort
ORACLE instance shut down.
```

```
SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/*. *
/u01/app/oracle/oradata/PROD1/
```

```
`/home/oracle/backup/arch/coldBU_6/control01.ctl' -> `/u01/app/oracle/oradata/PROD1/control01.ctl'
`/home/oracle/backup/arch/coldBU_6/example01.dbf' -> `/u01/app/oracle/oradata/PROD1/example01.dbf'
`/home/oracle/backup/arch/coldBU_6/redo01.log' -> `/u01/app/oracle/oradata/PROD1/redo01.log'
`/home/oracle/backup/arch/coldBU_6/redo02.log' -> `/u01/app/oracle/oradata/PROD1/redo02.log'
`/home/oracle/backup/arch/coldBU_6/redo03.log' -> `/u01/app/oracle/oradata/PROD1/redo03.log'
`/home/oracle/backup/arch/coldBU_6/redo04.log' -> `/u01/app/oracle/oradata/PROD1/redo04.log'
`/home/oracle/backup/arch/coldBU_6/sysaux01.dbf' -> `/u01/app/oracle/oradata/PROD1/sysaux01.dbf'
`/home/oracle/backup/arch/coldBU_6/system01.dbf' -> `/u01/app/oracle/oradata/PROD1/system01.dbf'
`/home/oracle/backup/arch/coldBU_6/temp01.dbf' -> `/u01/app/oracle/oradata/PROD1/temp01.dbf'
`/home/oracle/backup/arch/coldBU_6/undotbs01.dbf' -> `/u01/app/oracle/oradata/PROD1/undotbs01.dbf'
`/home/oracle/backup/arch/coldBU_6/users01.dbf' -> `/u01/app/oracle/oradata/PROD1/users01.dbf'
```

```
[oracle@edydr1p1 ~]$ cd arch1
[oracle@edydr1p1 arch1]$ ls
arch_1_10_1043935856.arc  arch_1_12_1043935856.arc  arch_1_6_1043935856.arc
arch_1_8_1043935856.arc  arch_1_11_1043935856.arc  arch_1_13_1043935856.arc
arch_1_7_1043935856.arc  arch_1_9_1043935856.arc
```

```
[oracle@edydr1p1 arch1]$ rm *
[oracle@edydr1p1 arch1]$ ls
[oracle@edydr1p1 arch1]$
```

DB를 실행하고 현재 상태를 확인한다.

```
SYS@PROD1>startup
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size               452985504 bytes
Database Buffers           771751936 bytes
Redo Buffers                13852672 bytes
Database mounted.
Database opened.
```

```
SYS@PROD1>select a.group#, b.sequence#, a.member, b.bytes/1024/1024 MB,
2 b.archived, b.status, b.first_change#
3 from v$logfile a, v$log b
4 where a.group# = b.group#
5 order by 1;
```

GROUP#	SEQUENCE#	MEMBER	MB	ARC	STATUS	FIRST_CHANGE#
1	4	/u01/app/oracle/oradata/PROD1/redo01.log	50	YES	INACTIVE	2436138
2	5	/u01/app/oracle/oradata/PROD1/redo02.log	50	YES	INACTIVE	2436142
3	6	/u01/app/oracle/oradata/PROD1/redo03.log	50	NO	CURRENT	2436155

3 rows selected.

시퀀스 6에서 테이블 생성한 후 테스트를 위해 로그 스위치를 일으킨다.

```
SYS@PROD1>create table hr.dept_new
2  as
3  select *
4  from hr.departments;
```

Table created.

```
SYS@PROD1>select count(*)
2  from hr.dept_new;
```

```
COUNT(*)
-----
        27
```

1 row selected.

```
SYS@PROD1>alter system switch logfile;
System altered.
```

```
SYS@PROD1>/
System altered.
```

```
SYS@PROD1>/
System altered.
```

```
SYS@PROD1>/
System altered.
```

현재 시퀀스 10임을 확인

```
SYS@PROD1>select group#, sequence#, members, archived, status
1  , first_change#, first_time, next_change#, next_time
2* from v$log
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	10	1	NO	CURRENT	2437790	25-JUN-20	2.8147E+14	
2	8	1	YES	INACTIVE	2437784	25-JUN-20	2437787	25-JUN-20
3	9	1	YES	INACTIVE	2437787	25-JUN-20	2437790	25-JUN-20

3 rows selected.

```
[oracle@edydr1p1 arch1]$ ls
arch_1_6_1043935856.arc  arch_1_7_1043935856.arc
arch_1_8_1043935856.arc  arch_1_9_1043935856.arc
```

상황발생!! 누군가 컨트롤 파일과 리두 로그 파일을 지웠다.

```
SYS@PROD1>! rm /u01/app/oracle/oradata/PROD1/control01.ctl
SYS@PROD1>! rm /u01/app/oracle/oradata/PROD1/*.log
```

```
SYS@PROD1>! ls /u01/app/oracle/oradata/PROD1/
example01.dbf  sysaux01.dbf  system01.dbf  temp01.dbf  undotbs01.dbf  users01.dbf
```

현재세션에서는 잘 진행되지만 (로그 스위치를 실행해본다) 다른 세션에 접속하려고 하니 오류발생

```
SYS@PROD1>alter system switch logfile;
System altered.

SYS@PROD1>conn / as sysdba
Connected.

SYS@PROD1>select name
  2  from v$database;
from v$database

ORA-00210: cannot open the specified control file
ORA-00202: control file: '/u01/app/oracle/oradata/PROD1/control01.ctl'
ORA-27041: unable to open file
Linux-x86_64 Error: 2: No such file or directory
```

DB 강제종료 후 컨트롤 파일과 데이터 파일을 복원한다.

```
SYS@PROD1>shutdown abort
ORACLE instance shut down.

SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/control01.ctl
/u01/app/oracle/oradata/PROD1/
`/home/oracle/backup/arch/coldBU_6/control01.ctl' -> `/u01/app/oracle/oradata/PROD1/control01.ctl'

SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/*.dbf
/u01/app/oracle/oradata/PROD1/
`/home/oracle/backup/arch/coldBU_6/example01.dbf' -> `/u01/app/oracle/oradata/PROD1/example01.dbf'
`/home/oracle/backup/arch/coldBU_6/sysaux01.dbf' -> `/u01/app/oracle/oradata/PROD1/sysaux01.dbf'
`/home/oracle/backup/arch/coldBU_6/system01.dbf' -> `/u01/app/oracle/oradata/PROD1/system01.dbf'
`/home/oracle/backup/arch/coldBU_6/temp01.dbf' -> `/u01/app/oracle/oradata/PROD1/temp01.dbf'
`/home/oracle/backup/arch/coldBU_6/undotbs01.dbf' -> `/u01/app/oracle/oradata/PROD1/undotbs01.dbf'
`/home/oracle/backup/arch/coldBU_6/users01.dbf' -> `/u01/app/oracle/oradata/PROD1/users01.dbf'
```

MOUNT 상태로 올려놓고 복구작업을 실행한다.

```
SYS@PROD1>startup mount
ORACLE instance started.

Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size              452985504 bytes
Database Buffers          771751936 bytes
Redo Buffers               13852672 bytes
Database mounted.

SYS@PROD1>recover database until cancel using backup controlfile;
ORA-00279: change 2436438 generated at 06/24/2020 14:19:06 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_6_1043935856.arc
ORA-00280: change 2436438 for thread 1 is in sequence #6

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
```

★ Enter로 아카이브 로그 파일 복구 계속 진행

```

ORA-00279: change 2437726 generated at 06/25/2020 13:14:31 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_8_1043935856.arc
ORA-00280: change 2437726 for thread 1 is in sequence #8
ORA-00278: log file '/home/oracle/arch1/arch_1_7_1043935856.arc' no longer needed for this
recovery

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}

ORA-00279: change 2437730 generated at 06/25/2020 13:14:34 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_9_1043935856.arc
ORA-00280: change 2437730 for thread 1 is in sequence #9
ORA-00278: log file '/home/oracle/arch1/arch_1_8_1043935856.arc' no longer needed for this
recovery

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}

ORA-00279: change 2437770 generated at 06/25/2020 13:15:37 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_10_1043935856.arc
ORA-00280: change 2437770 for thread 1 is in sequence #10
ORA-00278: log file '/home/oracle/arch1/arch_1_9_1043935856.arc' no longer needed for this
recovery

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}

ORA-00279: change 2438166 generated at 06/25/2020 13:25:14 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_11_1043935856.arc
ORA-00280: change 2438166 for thread 1 is in sequence #11
ORA-00278: log file '/home/oracle/arch1/arch_1_10_1043935856.arc' no longer needed for this
recovery

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}

ORA-00308: cannot open archived log '/home/oracle/arch1/arch_1_11_1043935856.arc'
ORA-27037: unable to obtain file status
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3

```

데이터 파일, 컨트롤 파일, 리두 로그 파일의 정보가 동기화되지 못했다. resetlogs 옵션으로 DB를 열어준다.

```

SYS@PROD1>alter database open resetlogs;
Database altered.

SYS@PROD1>select count(*)
2  from hr.dept_new;

COUNT(*)
-----
27

1 row selected.

SYS@PROD1>select group#, sequence#, members, archived, status
2  , first_change#, first_time, next_change#, next_time
3  from v$log;

GROUP#  SEQUENCE#  MEMBERS ARC STATUS          FIRST_CHANGE# FIRST_TIM NEXT_CHANGE# NEXT_TIME
-----
1        1          1 NO  CURRENT          2438167 25-JUN-20  2.8147E+14
2        0          1 YES UNUSED              0
3        0          1 YES UNUSED              0

3 rows selected.

```

Case 5. 백업해 놓은 컨트롤 파일과 현재 데이터 파일의 정보가 다른 경우

백업본 받아오기 (초기화)

```
SYS@PROD1>shutdown abort
ORACLE instance shut down.
```

```
SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/*.*
/u01/app/oracle/oradata/PROD1
```

```
`/home/oracle/backup/arch/coldBU_6/control01.ctl' -> `/u01/app/oracle/oradata/PROD1/control01.ctl'
`/home/oracle/backup/arch/coldBU_6/example01.dbf' -> `/u01/app/oracle/oradata/PROD1/example01.dbf'
`/home/oracle/backup/arch/coldBU_6/redo01.log' -> `/u01/app/oracle/oradata/PROD1/redo01.log'
`/home/oracle/backup/arch/coldBU_6/redo02.log' -> `/u01/app/oracle/oradata/PROD1/redo02.log'
`/home/oracle/backup/arch/coldBU_6/redo03.log' -> `/u01/app/oracle/oradata/PROD1/redo03.log'
`/home/oracle/backup/arch/coldBU_6/redo04.log' -> `/u01/app/oracle/oradata/PROD1/redo04.log'
`/home/oracle/backup/arch/coldBU_6/sysaux01.dbf' -> `/u01/app/oracle/oradata/PROD1/sysaux01.dbf'
`/home/oracle/backup/arch/coldBU_6/system01.dbf' -> `/u01/app/oracle/oradata/PROD1/system01.dbf'
`/home/oracle/backup/arch/coldBU_6/temp01.dbf' -> `/u01/app/oracle/oradata/PROD1/temp01.dbf'
`/home/oracle/backup/arch/coldBU_6/undotbs01.dbf' -> `/u01/app/oracle/oradata/PROD1/undotbs01.dbf'
`/home/oracle/backup/arch/coldBU_6/users01.dbf' -> `/u01/app/oracle/oradata/PROD1/users01.dbf'
```

```
[oracle@edydr1p1 arch1]$ ls
arch_1_10_1043935856.arc  arch_1_12_1043935856.arc  arch_1_6_1043935856.arc
arch_1_8_1043935856.arc  arch_1_11_1043935856.arc  arch_1_13_1043935856.arc
arch_1_7_1043935856.arc  arch_1_9_1043935856.arc
```

```
[oracle@edydr1p1 arch1]$ rm *
[oracle@edydr1p1 arch1]$ ls
```

DB를 오픈한 후 현재 리두 로그 파일 상태 확인

```
SYS@PROD1>startup
ORACLE instance started.
Database mounted.
Database opened.
```

```
SYS@PROD1>select group#, sequence#, members, archived, status
2 , first_change#, first_time, next_change#, next_time
3 from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	4	1	YES	INACTIVE	2436138	24-JUN-20	2436142	24-JUN-20
2	5	1	YES	INACTIVE	2436142	24-JUN-20	2436155	24-JUN-20
3	6	1	NO	CURRENT	2436155	24-JUN-20	2.8147E+14	

3 rows selected.

테이블을 추가한 후 정상종료한다. (테스트를 위해 로그 스위칭)

```
SYS@PROD1>create table scott.emp_20
2 as
3 select *
4 from hr.employees
5 where department_id = 20;
```

Table created.

```
SYS@PROD1>select count(*)
2  from scott.emp_20;
```

```
COUNT(*)
-----
2
```

1 row selected.

```
SYS@PROD1>select group#, sequence#, members, archived, status
2  , first_change#, first_time, next_change#, next_time
3  from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	4	1	YES	INACTIVE	2436138	24-JUN-20	2436142	24-JUN-20
2	5	1	YES	INACTIVE	2436142	24-JUN-20	2436155	24-JUN-20
3	6	1	NO	CURRENT	2436155	24-JUN-20	2.8147E+14	

3 rows selected.

```
SYS@PROD1>alter system switch logfile;
System altered.
```

```
SYS@PROD1>/
System altered.
```

```
SYS@PROD1>/
System altered.
```

```
SYS@PROD1>select a.group#, b.sequence#, a.member, b.bytes/1024/1024 MB,
2  b.archived, b.status
3  from v$logfile a, v$log b
4  where a.group# = b.group#
5  order by 1;
```

GROUP#	SEQUENCE#	MEMBER	MB	ARC	STATUS
1	7	/u01/app/oracle/oradata/PROD1/redo01.log	50	YES	INACTIVE
2	8	/u01/app/oracle/oradata/PROD1/redo02.log	50	YES	INACTIVE
3	9	/u01/app/oracle/oradata/PROD1/redo03.log	50	NO	CURRENT

3 rows selected.

```
SYS@PROD1>shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
```

상황발생!! 누군가 컨트롤 파일을 삭제했다.

```
SYS@PROD1>! rm /u01/app/oracle/oradata/PROD1/control01.ctl
```

```
SYS@PROD1>! ls /u01/app/oracle/oradata/PROD1/
control02.ctl  example01.dbf  redo02a.log  redo03.log  sysaux01.dbf  undotbs01.dbf
control03.ctl  redo01a.log    redo02.log   redo04a.log  system01.dbf  users01.dbf
data01.dbf     redo01.log     redo03a.log  redo04.log   temp01.dbf
```

다시 DB를 구동하자 에러가 발생하면 DB를 강제 종료한 후 컨트롤 파일을 복원한다.

```
SYS@PROD1>startup
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size               452985504 bytes
Database Buffers            771751936 bytes
Redo Buffers                 13852672 bytes
ORA-00205: error in identifying control file, check alert log for more info
```

```
SYS@PROD1>shutdown abort
ORACLE instance shut down.
```

```
SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/control01.ctl
/u01/app/oracle/oradata/PROD1/
```

```
`/home/oracle/backup/arch/coldBU_6/control01.ctl' -> `/u01/app/oracle/oradata/PROD1/control01.ctl'
```

* 백업 이후로 테이블을 추가한 이력이 있어 SCN이 일치하지 않아 MOUNT 상태에서 더이상 진행되지 못한다.

```
SYS@PROD1>startup
ORACLE instance started.
..
Database mounted.
ORA-01122: database file 1 failed verification check
ORA-01110: data file 1: '/u01/app/oracle/oradata/PROD1/system01.dbf'
ORA-01207: file is more recent than control file - old control file
```

복구를 시도한다.

* 시퀀스 6~8은 아카이빙 된 파일이 남아있어 복구가 되지만, 시퀀스 9는 CURRENT 상태였기 때문에 아카이빙 된 파일이 없어 복구되지 못한다.

```
SYS@PROD1>recover database using backup controlfile
ORA-00279: change 2436438 generated at 06/24/2020 14:19:06 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_6_1043935856.arc
ORA-00280: change 2436438 for thread 1 is in sequence #6

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
auto
ORA-00279: change 2437688 generated at 06/25/2020 09:58:16 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_7_1043935856.arc
ORA-00280: change 2437688 for thread 1 is in sequence #7
ORA-00278: log file '/home/oracle/arch1/arch_1_6_1043935856.arc' no longer needed for this recovery

ORA-00279: change 2437691 generated at 06/25/2020 09:58:17 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_8_1043935856.arc
ORA-00280: change 2437691 for thread 1 is in sequence #8
ORA-00278: log file '/home/oracle/arch1/arch_1_7_1043935856.arc' no longer needed for this recovery

ORA-00279: change 2437694 generated at 06/25/2020 09:58:19 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_9_1043935856.arc
ORA-00280: change 2437694 for thread 1 is in sequence #9
ORA-00278: log file '/home/oracle/arch1/arch_1_8_1043935856.arc' no longer needed for this recovery

ORA-00308: cannot open archived log '/home/oracle/arch1/arch_1_9_1043935856.arc'
ORA-27037: unable to obtain file status
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3
```



```
[oracle@edydr1p1 arch1]$ ls
arch_1_6_1043935856.arc  arch_1_7_1043935856.arc  arch_1_8_1043935856.arc
```

★ 다시 복구하면서 시퀀스 9의 변경사항이 담겨있던 리두 로그 파일의 경로를 직접 써준다. 그러나 data01.dbf의 오류로 복구되지 못했다.

```
SYS@PROD1>recover database using backup controlfile
ORA-00279: change 2437694 generated at 06/25/2020 09:58:19 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_9_1043935856.arc
ORA-00280: change 2437694 for thread 1 is in sequence #9
```

```
Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
/u01/app/oracle/oradata/PROD1/redo03.log
ORA-00283: recovery session canceled due to errors
ORA-01244: unnamed datafile(s) added to control file by media recovery
ORA-01110: data file 2: '/u01/app/oracle/oradata/PROD1/data01.dbf'

ORA-01112: media recovery not started
```

data01.dbf 파일의 상태를 조회해본다.

```
SYS@PROD1>select a.file#, b.name b_name, a.name a_name, a.status,
a.checkpoint_change#
2 from v$datafile a, v$tablespace b
3 where a.ts# = b.ts#;
```

FILE#	B_NAME	A_NAME	STATUS	CHECKPOINT_CHANGE#
1	SYSTEM	/u01/app/oracle/oradata/PROD1/system01.dbf	SYSTEM	2436438
3	SYS_AUX	/u01/app/oracle/oradata/PROD1/sysaux01.dbf	ONLINE	2436438
4	UNDOTBS1	/u01/app/oracle/oradata/PROD1/undotbs01.dbf	ONLINE	2436438
6	USERS	/u01/app/oracle/oradata/PROD1/users01.dbf	ONLINE	2436438
5	EXAMPLE	/u01/app/oracle/oradata/PROD1/example01.dbf	ONLINE	2436438
2	DATA_TBS	/u01/app/oracle/product/12.1.0/dbhome_1/dbs/UNNAME D00002	RECOVER	2437746

6 rows selected.

★ 테이블 스페이스가 바로 등록되지 못하고 오라클이 인식할 수 없는 상태로 놓여있다. **RENAME** 작업을 한다.

```
SYS@PROD1>alter database rename file
'/u01/app/oracle/product/12.1.0/dbhome_1/dbs/UNNAMED00002' to
'/u01/app/oradata/PROD1/data01.dbf';
```

Database altered.

```
SYS@PROD1>select a.file#, b.name b_name, a.name a_name, a.status,
a.checkpoint_change#
2 from v$datafile a, v$tablespace b
3 where a.ts# = b.ts#;
```

FILE#	B_NAME	A_NAME	STATUS	CHECKPOINT_CHANGE#
1	SYSTEM	/u01/app/oracle/oradata/PROD1/system01.dbf	SYSTEM	2436438
3	SYS_AUX	/u01/app/oracle/oradata/PROD1/sysaux01.dbf	ONLINE	2436438
4	UNDOTBS1	/u01/app/oracle/oradata/PROD1/undotbs01.dbf	ONLINE	2436438
6	USERS	/u01/app/oracle/oradata/PROD1/users01.dbf	ONLINE	2436438
5	EXAMPLE	/u01/app/oracle/oradata/PROD1/example01.dbf	ONLINE	2436438
2	DATA_TBS	/u01/app/oracle/oradata/PROD1/data01.dbf	RECOVER	2437746

6 rows selected.

다시 복구작업을 하면 정상적으로 완료된다.

```
SYS@PROD1>recover database using backup controlfile;
ORA-00279: change 2437748 generated at 06/25/2020 10:00:00 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_9_1043935856.arc
ORA-00280: change 2437748 for thread 1 is in sequence #9

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
/u01/app/oracle/oradata/PROD1/redo03.log
Log applied.
Media recovery complete.
SYS@PROD1>alter database open resetlogs;

Database altered.
```

정상적으로 테이블이 조회되는지 확인하고, 데이터 파일과 리두 로그 파일 정보들을 확인한다.

```
SYS@PROD1>select count(*)
2 from scott.dept_n;
```

```
COUNT(*)
-----
27
```

1 row selected.

```
SYS@PROD1>select a.file#, b.name b_name, a.name a_name, a.status,
a.checkpoint_change#
2 from v$datafile a, v$tablespace b
3 where a.ts# = b.ts#;
```

FILE#	B_NAME	A_NAME	STATUS	CHECKPOINT_CHANGE#
3	SYSAUX	/u01/app/oracle/oradata/PROD1/sysaux01.dbf	ONLINE	2438104
1	SYSTEM	/u01/app/oracle/oradata/PROD1/system01.dbf	SYSTEM	2438104
4	UNDOTBS1	/u01/app/oracle/oradata/PROD1/undotbs01.dbf	ONLINE	2438104
6	USERS	/u01/app/oracle/oradata/PROD1/users01.dbf	ONLINE	2438104
5	EXAMPLE	/u01/app/oracle/oradata/PROD1/example01.dbf	ONLINE	2438104
2	DATA_TBS	/u01/app/oracle/oradata/PROD1/data01.dbf	ONLINE	2438104

6 rows selected.

```
SYS@PROD1>select a.group#, b.sequence#, a.member, b.bytes/1024/1024 MB,
2 b.archived, b.status, b.first_change#
3 from v$log a, v$log b
4 where a.group# = b.group#
5 order by 1;
```

GROUP#	SEQUENCE#	MEMBER	MB	ARC	STATUS
1	1	/u01/app/oracle/oradata/PROD1/redo01.log	50	NO	CURRENT
2	0	/u01/app/oracle/oradata/PROD1/redo02.log	50	YES	UNUSED
3	0	/u01/app/oracle/oradata/PROD1/redo03.log	50	YES	UNUSED

3 rows selected.