

1. HMS RESOLUTION

RESOLUTION was the first Polaris submarine. RESOLUTION went into Rosyth in November 1986 for special repairs and modernisation. An incident took place in Jan 88 which was reported as a serious reactor problem. A report was submitted to the Defence Select Committee on this incident and the Committee concluded that there was no cause for concern (HC422 87/88 pxxxiii). The movements of RESOLUTION during the remainder of 1988 are not certain but it appears that the submarine went out on patrol soon after the incident. When it returned it was in the dry dock for 7 weeks. It appears that it was not on patrol for the remainder of 1988.

RESOLUTION has carried out three long patrols in 1990 and 1991, the second of which was for 16 weeks, 4 weeks beyond the normal maximum. J McFall said in Nov 90 that no inspection for the reactor fault had been carried out on RESOLUTION (GH 19 Nov 90). RESOLUTION has only been docked in Faslane for possibly 8 weeks in May/Jun 90 and 5 weeks in Dec 90/Jan 91. This may not have provided sufficient time for the reactor to cool down for a substantial inspection.

HMS RESOLUTION HISTORY

Feb 64 - Oct 67 construction

26 Feb 64 hull laid down at Vickers, Barrow
15 Sep 66 launched (Janes Warships)
Sep 66 cracks discovered in welds of hull (neptune papers)

2 Oct 67 - May 70 first commission 2 years 7 months

2 Oct 67 commissioned (Janes Warships)
Jan 68 left Faslane on 29 Dec 67 for USA to test missiles,
returned on 8 Jan 68 after an electrical fault in
generator (HA 12 Jan 68)
15 Feb 68 first missile test (HA 23 Feb 68)
14 Jun 68 first patrol
May 70 visited Portsmouth prior to refit (HA 22 May 70)

May 70 - May 71 first refit 1 year 1 month

May 70 arriving for refit (HA 29 May 70)
Aug 70 fire in control room during refit (DP 21 Aug 70)

May 71 - Apr 75 second commission 4 years

May 71 recommissioned (HA 28 May 71)
Jun 71 in Faslane, returns to patrol cycle 1972 (HA 30 Jun 71)
Mar 72 missile test (HA 17 Mar 72)
Aug 73 in Coulport (HA 31 Aug 73)

Apr 75 - Nov 76 second refit 1 year 7 months

Apr 75 towed into Rosyth for refit (DP 11 Apr 75)

Nov 76 - Aug 82 third commission 5 years 9 months

Nov 76 recommissioned (HA 27 Nov 76)
Jun/Jul 78 on patrol (HA 21 Jul 78, DP 14 Jul 78)
2 Aug 78 docked & blacked by strike at Faslane (HA 11 Aug 78)
Jul 82 last patrol prior to refit (HA 27 Aug 82)
Aug 82 39 operational patrols completed to date (HA 27 Aug 82)

Aug 82 - Sep 84 third refit 2 years 1 month

Aug 82 left Faslane for refit (DP 20 Aug 82)
82/84 lagging on pipework found to contain asbestos, also
welding work on emergency cooling system, (Spot Jan 84)
2nd generation reactor core fitted (HC 479 84/5 q1897f)
Sep 84 refit completed (Spot Jan 85)

Sep 84 - Oct 92 fourth commission 8 years

May - Jun 85 3 missile tests, collision with fishing boat at
missile range (SIPRI 88, HC 422 87/88 p35)
Aug 86 just came off patrol (HA 8 Aug 86)
Nov 86 - May 87 in Rosyth for special repairs and moderisation
(Spot Nov 86)
Jun 87 3 SSBN in Gareloch for pre election photograph
26 Jan 88 an incident took place while berthed at Faslane,
apparently a sailor had to act quickly to avert
a melt down of the reactor (ET 19 feb 88)
Feb - Mar 88 on patrol ?
Apr - May 88 in dry dock for 7 weeks
Jun - Dec 88 not on patrol ?
Jan - Dec 89 insufficient information
Feb - May 90 10 - 12 week patrol
19 Jul - 4 Aug 90 trials
mid Aug - 10 Dec 90 16 week patrol
26 Jan - 3 Feb 91 trials
17 Feb - 91 patrol

3. HMS RENOWN

RENOWN ought to be the submarine in best condition having only been in commission for 15 years 10 months. It is currently undergoing a refit at Rosyth which began in Oct 87 and should have been completed in Oct 89. At the start of the refit a radioactive leak was discovered. In Jan 90 the MOD said that the refit would be complete in Apr 90. RENOWN was taken out of dry dock and was in the water before Apr 90. An extension of the refit by one or two months would not be unusual, however, the refit has already been extended by 19 months and there are rumours that it may be Dec 91 before the submarine is recommissioned (SoS 18 Nov 90). A serious problem has been identified at a late stage in the refit. This may be the same reactor problem which has affected the Valiant and Churchill class SSN. It may well be that efforts are being made to try to conduct a proper repair to the design fault which has been identified. If substantial repair work has to be carried out on RENOWN, then similar work may be needed on the other three submarines, all of which have been in commission for longer.

RENOWN HISTORY

Jun 64 - Nov 68 Construction

25 Jun 64 hull laid down, Cammell Laird, Birkenhead
25 Feb 67 launched (Janes Warships)

15 Nov 68 - Nov 72 first commission 4 years

15 Nov 68 commissioned (Janes Warships)
7 Oct 69 collision with MV Moyle (HA 7 Oct 69)
Jun 72 due into refit but delayed (DP 2 Jun 72)

Nov 72 - Jan 74 first refit 1 year 2 months

23 Nov 72 berthed at Rosyth (DP 24 Nov 72)
Feb 73 hydroplanes given to Repulse (DP 2 Feb 73)
(Repulse hydroplanes damaged in fire (HA 19 Jan 73))

Jan 74 - Jul 78 second commission 4 years 6 months

26 Jan 74 recommissioned (DP 25 Jan 74)
19 Apr 74 hit the bottom during post refit work up (HA 19 Apr 74)

7 Jul 78 - Sep 84 third commission 6 years 1 month

7 Jul 78 recommissioned (HA 21 Jul 78)
Jul/Aug 78 held up by pay dispute (DP 7 Jul 78, 4 Aug 78)
14 Aug 78 sailed from Rosyth (DP 18 Aug 78)
Apr 79 missile tests (HA 26 Jan 79)
Apr 79 sub rescue exercise (HA 29 Apr 79)
May 81 at Coulport, blacked by strikers (HA 1 May 81)
Dec 81 sailor drowned overboard, Sound of Jura (HA 18 Dec 81)

Sep 84 - 24 Oct 86 third refit 2 years

Sep 84 into Rosyth for refit (HA 2 Nov 84)
Oct 84 in for third refit (Spot Oct 84)
18 Sep 85 fire in drydock (DP 20 Sep 85, Spot Apr 86)
84/86 refit involved major innovative repair in reactor compartment, cutting machine designed to remove steam corrosive cracking from steam generators (Spot Nov 86)
84/86 2nd generation reactor core fitted (HC 479 84/5 q 1897)

24 Oct 86/ (Oct 94) fourth commission (8 years)

24 Oct 86 recommissioned (Spot Nov 86)
Apr/May 87 4 missile tests (HC 422 87/88 p35, HA 10 Apr 87)
25 Nov 88 3 peacecampers enter control room in Faslane
Sep 89 sub rescue exercise (Navy News Nov 89)
Apr - May 88 10 week patrol
Aug - Sep 88 10 week patrol
Dec 88 - Jan 89 on patrol
Jan - Dec 89 insufficient information
May - Jul 90 on patrol, 200th Polaris patrol (Navy News Sep 90)
Sep/Oct 90 in dry dock at Faslane
Nov 90 - Apr 91 in Faslane except for short visit to Coulport in Mar

Jul 78 - May 80 second refit 1 years 11 months

78/80 refit described as Rosyth's biggest challenge,
design modifications (DP 7 Jul 78)
2nd generation reactor core fitted(HC 479 84/5 q 1897f)
Jul/Aug 78 refit delayed by pay dispute (DP 4 Jul 78, 4 Aug 78)
Dec 78 delays caused by manpower shortages (DP 22 Dec 78)
Feb 79 workers refuse to work in radioactive areas after
report on hazards (DP 23 Feb 79)
Jun 79 work stopped 7 times by hoax calls (DP Jun 79)
Jun 79 still problems with workforce (DP 27 Jul 79)
Sep 79 naval personnel replace 30 striking health physics
monitors (DP 21 Sep 79)
28 Sep 79 work resumes (DP 28 Sep 79)

May 80 - Oct 87 third commission 7 years 5 months

3 May 80 recommissioned (DP 9 May 80)
Dec 80 missile tests (HA 14 Nov 80)
Jan/Feb 82 4 missile tests (HA 29 Jan 82, HC 422 87/88 p35)

Oct 87 - () third refit (3 years 5 months +)

Oct 87 arrives for refit (DP 2 Oct 87)
Oct 87 radioactive leak discovered during tests (DP 9 Oct 87)
Dec 87 workers clothing contaminated (DP 25 Dec 87)
Sep 90 final refurbishment of missile tubes by VSEL(VSEL link)
Nov 90 extra work after major refit (DP 23 Nov 90)

4. HMS REVENGE

REVENGE ought not to be in active use. It would have been projected that the submarine would enter refit in Rosyth in Oct 89. Had this been done then REVENGE would have been in commission for 7 years. This would be consistent with the last commission of RENOWN which was for 7 years 5 months and which was the first to be completed using a second generation reactor core. Prior to this the longest commission had been for 6 years 1 month. The new reactor cores were intended to extend reactor life and have been backfitted in all refits since 1978 (HC 479 84/5 q1897f). It is unlikely that it was intended that commission lengths be extended beyond 8 years. REVENGE has now been in commission for 8 years 7 months.

It has been said that cracks were discovered on the reactor pipework of REVENGE, and that these have been ground out (independent 19 Nov 90). REVENGE may have been docked at Faslane for 14 weeks in Mar - May 90 and for 10 weeks in Sep - Oct 90. Inspections at least of the reactor could have been carried out at either time.

It has also been said that REVENGE had not been at sea for 9 months (SoS 6 Jan 91). This is not consistent with submarine sightings. In Aug 90 REVENGE was on patrol for between 5 and 7 weeks. REVENGE was also on patrol between Dec 90 and Feb 91. REVENGE did not go through normal pre patrol work ups in Jun 90, Nov 90 or Apr 91. This would indicate that there is a reluctance to use the reactor at full power beyond when on operational patrol.

During the last refit in 80/82 decontamination was carried out of the primary coolant system, resulting in radioactive waste considerably in excess of the permitted limits for Rosyth.

REVENGE HISTORY

May 65 - Dec 69 Construction

19 May 65 hull laid down, Cammell Laird, Birkenhead
15 Mar 68 launched (Janes Warships)

Dec 69 - Dec 73 first commission 4 years

4 Dec 69 commissioned (Janes Warships)
Jul 70 shakedown tests in USA (DP Jul 70)
May 73 returned from patrol (HA 11 May 73)

Dec 73 - Apr 75 first refit 1 year 4 months

Jan in refit (HA 11 Jan 74, DP 1 Feb 74)

Apr 75 - Apr 80 second commission 5 years

19 Apr 75 recommissioned (DP 18 Apr 75)
May 78 large steam leak in turbo generator room, major
disaster averted, awards for two crew (HA 23 Feb 79)
Jul 78 at Coulport blacked by workers (DP 14 Jul 78)
Aug 78 Navy prepared for sea while blacked (HA 4 Aug 78)
4 Dec 78 missile test (HA ? 1 Dec 78)
Mar 80 electrical fire involving power cable from jetty to
sub (HA 7 Mar 80)

Apr 80 - Oct 82 second refit 2 years 6 months

23 Apr 80 arrived in Rosyth (DP 25 Apr 80)
11 Jul 80 decontamination barge brought from Chatham
Jan 81 refit involved first decontamination of primary
coolant system for Rosyth, decontamination before
reactor work began. Extra 53 cubic metres, 7.3 curies
of radioactive waste produced by primary plant
decontamination exercise. (DP Jan 81, Spot Aug 82,
Stat Bulletin, radioactive discharges Scotland 80-84)
Jun 81 strike stopped work (DP 5 Jun 81)
80/82 refit included modifications for Chevaline (Spot Aug 82)
82 damage to gearbox caused by a piece of metal during
refit, sabotage suspected (HA 26 Nov 82)
Aug 82 isotope found under sub, lost Feb 81 (DP 20 Aug 82)
3 Sep 82 planned end of refit (Spot Aug 82)

Oct 82 - () third commission (8 years 6 months +)

Nov 82 out of refit (DP, HA 26 Nov 82)
May/June 83 6 missile tests, 1 aborted
Jul/Aug 86 4 missile tests with remotored missiles, 1 missed
(HA 25 Jul 86, HC 422 87/88 p35)
Jun/Jul 88 9 week patrol
Oct/Nov 88 8 week patrol
Mar/Apr 89 on patrol
May 89 - Feb 90 insufficient information
Jul/Aug 90 5 - 7 week patrol
9 Dec 90/18 Feb 91 10 week patrol
25 Feb/22 Mar 91 in dry dock

Time /
Apr /
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ROSYTH

start date	recomm date	submarine	refit	core	chev	primary circuit
May 70	May 71	Resolution	1	A		
May 71	Jul 72	Repulse	1	A		
Nov 72	26 Jan 74	Renown	1	A		
Dec 73	19 Apr 75	Revenge	1	A		
Apr 75	Nov 76	Resolution	2	A		
Oct 76	7 Jul 78	Repulse	2	A		
Jul 78	3 May 80	Renown	2	B	chev	
Apr 80	Oct 82	Revenge	2	B	chev	decontamination
Aug 82	Sep 84	Resolution	3	B	chev	welding
Sep 84	24 Oct 86	Repulse	3	B	chev	inovative repair
Nov 86	by May 87	Resolution	extra			
Oct 87	()	Renown	3	B		

MISSILE TESTS

commission date	test date	submarine	total	failed
2 Oct 67	Feb 68	Resolution		
28 Sep 68	Mar/Apr 69	Repulse		
15 Nov 68	NK	Renown		
Dec 69	Jul 70	Revenge		
May 71	NK	Resolution		
Jul 72	Feb 73	Repulse		
26 Jan 74	NK	Renown		
19 Apr 75	NK	Revenge		
Nov 76	NK	Resolution		
	Dec 78	Revenge		
7 Jul 78	Apr 79	Repulse		
3 May 80	Dec 80	Renown		
	Jan/Feb 82	Renown	4	
Oct 82	May/Jun 83	Revenge RES	6	1
Sep 84	May/Jun 85	Resolution	3	
	Jul/Aug 86	Revenge	4	<i>New Portel</i>
24 Oct 86	Apr/May 87	Repulse	4	

The period of trials between the recommission date and missile tests is between 6 and 9 months and on average 7½ months.

LENGTH OF SERVICE AT 1 MAY 91

	RESOLUTION	REPULSE	RENOWN	REVENGE
1st commission	2 yr 7 mn	2 yr 8 mn	4 yr	4 yr
2nd commission	3 yr 11 mn	4 yr 2 mn	4 yr 6 mn	5 yr
3rd commission	5 yr 9 mn	6 yr 2 mn	7 yr 5 mn*	8 yr 7 mn*
4th commission	6 yr 8 mn*	4 yr 5 mn*		
1st refit	1 yr	1 yr 2 mn	1 yr 2 mn	1 yr 4 mn
2nd refit	1 yr 7 mn	1 yr 9 mn	1 yr 10 mn	2 yr 6 mn
3rd refit	2 yr 1 mn	2 yr 1 mn	3 yr 7 mn	
total in commission	18 yr 11 mn	17 yr 5 mn	15 yr 11 mn	17 yr 7 mn
total in refit	4 yr 8 mn	5 yr	6 yr 7 mn	4 yr
combined total	23 yr 7 mn	22 yr 5 mn	22 yr 6 mn	21 yr 7 mn

* 2nd generation reactor core

total in commission (1 Jan 90) 17 yr 7 mn 16 yr 1 mn ^{15 yr 11 mn} ~~16 yr 1 mn~~ 16 yr 3 mn

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AVAILABILITY FOR PATROL

from to months

REVENGE		RESOLUTION	Jun 68	May 69	12
REVENGE		RESOLUTION	Jun 69	Jul 69	2
REVENGE		RESOLUTION	Aug 69	Apr 70	9
REVENGE		RESOLUTION	May 70	Aug 70	4
REVENGE		RESOLUTION	Sep 70	Apr 71	8
REVENGE		RESOLUTION	May 71	Jun 72	14
REVENGE		RESOLUTION	Jul 72	Oct 72	4
REVENGE		RESOLUTION	Nov 72	Mar 73	5
REVENGE		RESOLUTION	Apr 73	Nov 73	8
REVENGE		RESOLUTION	Dec 73	Sep 74	10
REVENGE		RESOLUTION	Oct 74	Mar 75	6
REVENGE		RESOLUTION	Apr 75	Dec 75	9
REVENGE		RESOLUTION	Jan 76	Sep 76	9
REVENGE		RESOLUTION	Oct 76	Jul 77	10
REVENGE		RESOLUTION	Aug 77	Jun 78	11
REVENGE		RESOLUTION	Jul 78	May 79	11
REVENGE		RESOLUTION	Jun 79	Mar 80	10
REVENGE		RESOLUTION	Apr 80	Jan 81	12
REVENGE		RESOLUTION	Jul 81	Jul 82	26
REVENGE		RESOLUTION	Aug 82	Jul 83	12
REVENGE		RESOLUTION	Aug 83	Aug 84	13
REVENGE		RESOLUTION	Sep 84	Jul 85	11
REVENGE		RESOLUTION	Aug 85	Oct 86	15
REVENGE		RESOLUTION	Nov 86	May 87	7
REVENGE		RESOLUTION	Jun 87	Jul 87	2
REVENGE		RESOLUTION	Aug 87	Sep 87	2
REVENGE		RESOLUTION	Oct 87	May 91	44

~~RESOLUTION~~
~~REPULSE~~

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